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All technical data is subject to change.
® ERWEKA

Examples for ordering

1. ERWEKA Friability-/Abrasion Tester with two test stations (230V/50Hz), Friability Drum left with certificate, Abrasion Drum right without certificate, USB interface and Qualification document (IQ/OQ/PQ)

12-325-0001	ERWEKA Friability-/Abrasion Tester, Type TAR 220 (230V/50Hz)
11-3x5-2xxx	Friability Drum, left, certified
11-3x5-x3xx	Abrasion Drum, right
12-325-2301	**TAR 220 (230V/50Hz) with Friability Drum left (certified) and Abrasion Drum right**
82-249-0000	**USB interface**
86-315-9999	**Qualification document (IQ/OQ/PQ) for ERWEKA TAR Series**

2. ERWEKA Dissolution Tester, Type DT 626 Low Head, with 6 test stations (1.000 ml), 230V/60Hz, with automatic USP sampling station (Teflon tubing 3.0 mm o.d.)

14-060-6001	ERWEKA DT 626 LH, 230V/60Hz with glass vessels and paddles
14-06x-xx1x	USB printer interface (PCL 3/5) for hard-copy documentation of test-run parameters, calibration routines etc. Upgraded electronics (real time watch) and instrument menu (printer settings, time/date settings etc.)
14-060-6011	**ERWEKA DT 626 (230V/60Hz) with automatic USP sampling station and centering tools made of st.steel**

3. ERWEKA Disintegration Tester ZT 320 Series with 1 Test Station, 115V/60Hz, USB interface, 2 spare part kits for USP basket rack assembly, Qualification document (IQ/OQ/PQ) and Qualification tool kit in certified version.

12-231-0003	ERWEKA ZT 321, 115V/60Hz
12-23x-xx1x	USB interface
12-231-0013	**ERWEKA ZT 321, 115V/60Hz with USB interface**
92-240-0001 (2)	**2 Spare part kits for USP basket rack assembly**
65-230-9999	**Qualification document (IQ/OQ/PQ) for ZT 320 Series**
67-240-0000	**Qualification tool kit, certified, for ZT 120/220/320 Series**

Dissolution Tester (USP apparatus 1, 2, 5 and 6)

ERWEKA DT 820

6, 7 and 8 stirrer type

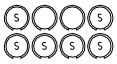
ERWEKA DT 820 has been designed with increased memory capacity to control complete Dissolution Offline Systems for advanced stand-alone operation.
DT 820 allows storage of up to 100 product test-run parameters which can be interchanged between various DT 820's by USB memory stick.
The unit, as far as possible is made from carbon fibre to reduce any risk of corrosion.
DT 820 can be used in conventional High-Head mode and low-evaporation Low-Head mode.

14-080-6001-4

- ✓ Optional Online OQ-Check for rpm
- ✓ Integrated System-Suitability Test menu with documentation print-out
- ✓ Hours of operation counter
- ✓ Logbook function with three user levels for the last 600 users (On-/Off-time, name and OQ Traffic Light status)
- ✓ Automatic height adjustment
- ✓ Automatic vessel centering
- ✓ Standard Tablet Drop Magazine for 8 samples. Optional automatic tablet drop with control of temperature tolerance (USP) before drop
- ✓ Evaporation less than 0.3% in Low Head mode and less than 0.7% in High Head mode (24h/37.0°C)
- ✓ pH Change routines, menu guided
- ✓ Optic and acoustic reminder for manual sampling (count-down)
- ✓ Manual Lifter with hydraulic support
- ✓ One-piece leak-free moulded, illuminated water bath with outlet cock (optional)
- ✓ PT 100 external temperature sensor for water bath- or media temperature display
- ✓ External heating system with control by the keypad and LC display of the DT 820; accuracy ± 0.2°C
- ✓ Temperature sensors
- ✓ Video monitoring and recording
- ✓ Pre-heat function
- ✓ Optional monitoring of the media temperatures by up to 8 electronic PT 100
- ✓ Calibration menu for quick calibration of the 1 or 9 temperature sensors
- ✓ Shaft wobble less than 0.2 mm at delivery
- ✓ Quick exchange system for the stirring methods by magnets (MagniShaft)
- ✓ Corrosion-free plate for holding the vessels
- ✓ Programme menu for storage of the monographs of up to 100 products
- ✓ Automatic self-check of the temperature in the bath/vessels before test start
- ✓ Alpha-numeric touch sensitive keypad (IBM configuration) with illuminated full-graphic 6" display
- ✓ RS 232 and RS 485 serial interfaces for external control
- ✓ USB printer interface for documentation of the test run parameters (time, date, rpm, temperatures etc.) by a standard printer (PCL 3 language)
- ✓ Optional USP Sampling Station with automatic height adjustment of the USP sampling points
- ✓ Optional upgraded programme menu ("i"-version) for the control of a complete Offline Dissolution System by the Dissolution Tester itself
- ✓ Optional video monitoring of six test positions

ERWEKA DT 826
6 test stations, 2 reference positions

For 6 stirring elements and holding 8x1000 ml vessel



230V/50-60Hz	14-080-6001
115V/60Hz	14-080-6003
127V/60Hz	14-080-6004

ERWEKA DT 827
7 test stations, 1 reference position

For 7 stirring elements and holding 8x1000 ml vessel; Additional price

230V/50-60Hz	14-080-7001
115V/60Hz	14-080-7003
127V/60Hz	14-080-7004

ERWEKA DT 828
8 test stations

For 8 stirring elements and holding 8x1000 ml vessel; Additional price

230V/50-60Hz	14-080-8001
115V/60Hz	14-080-8003
127V/60Hz	14-080-8004

2000 ml Version

For holding ERWEKA USP compliant 2000 ml vessels; water bath made from acrylic glass instead mould PET water bath. For UniShaft only (High-Head and/or Low-Head configuration). Additional price 14-1xx-xxxx

Shaft Systems
MagniShaft or UniShaft

DT 820 is available with two different Shaft systems:

1.) MagniShaft for magnetic connection between stirring element and drive or
2.) UniShaft for screw connection.

Both systems comprise of an upper Shaft (inside the drive head) and a lower shaft to which the paddle or basket holder, transdermal cylinder (only UniShaft) or Intrinsic Dissolution Kit (only UniShaft) is connected.

While MagniShaft is only available for Low-Head use UniShaft system can be ordered for both, Low-Head and High-Head use.

MagniShaft is made for simultaneous test start while at UniShaft system the test start can be performed simultaneous or staggered.

While the upper shaft is generally made from stainless steel the lower parts is mould from Teflon with an integrated stainless steel core. On special request stainless steel stirring elements are available.

All parts are numbered and optionally come with a certificate of USP/EP compliance.

Options

- Cyrillic keypad and Russian operation menu; instead Latin keypad and English / German operation menu
  14-080-6005

- Automated, simultaneous, tablet drop magazine; samples are automatically dropped when temperature within the USP specified range. Staggered tablet drop is possible (manually) 84-070-0010

- Online OQ-Check for rpm by a second high precision sensor. Warning screen when rpm is out of tolerance (connected to OQ Traffic Light)
  89-080-0002

- Illumination of the water bath by LEDs
  84-090-0112

- Print LAN converter for the data transfer to network printers 84-090-0111

- Water Stabiliser with colour indicator, 1 bottle
  80-080-0002

Funnel

- With extension (plastics) for entering granules/powders and/or adding buffer solution through the sampling openings (Low-Head mode) 84-060-1500

Sample Withdraw Systems

- Prepared for upgrade to Sampling Station (without automated sampling station)
  14-x8x-x1xx

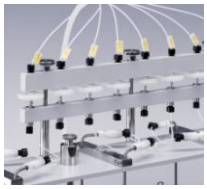
- Additional Sampling Station with stainless steel sampling- and replacement tubes, Teflon tubing, without motor, for use with sampling station drive. 84-070-0115

-
  USP/EP/JP compliant Sampling Station with automatic height adjustment of the 16 USP sampling heights. Teflon Tubing **1.6 mm** o.d.
  14-x8x-x2xx

-
  USP/EP/JP compliant Sampling Station with automatic height ; USP sampling heights. Teflon Tubing **3.0 mm** o.d.
  14-x8x-x4xx

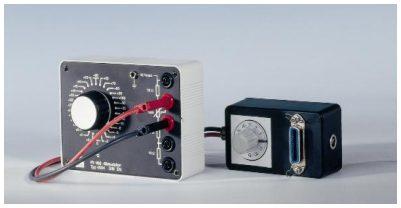
-
  with 8 additional electronic PT 100 temperature sensors for display and documentation of the media temperatures in all vessels, incl. automatic USP sampling station, Teflon Tubing **1.6 mm** o.d. 14-x8x-x6xx

-
  with 8 additional electronic PT 100 temperature sensors for display and documentation of the media temperatures in all vessels, incl. automatic USP Sampling Station, Teflon Tubing **3.0 mm** o.d. 14-x8x-x9xx

- 
  Additional price for Double Filtration station for holding membrane filters
  84-070-0955

- Titanium sampling- and replacement probes (corrosion-free) instead of stainless steel probes, at additional cost
  80-090-0200

- Cleaning reservoir (acrylic glass) with 3 separate compartments for cleaning of DT 820/720 sampling stations. The 3 compartments eliminate any possibility of contamination 80-089-0000

- 

  Electronic Calibration Kit for PT 100 temperature sensor/s.
  This kit allows fast calibration of the external electronic PT 100 temperature sensor as well as the 8 additional temperature sensors without the use of water.
  This not only eliminates the need of preheated water, it also saves up to 95% of the time needed 10-092-0001

Spare Part Kits

- Spare part kit for DT 820 comprising of 1 paddle with shaft, 1 vessel 1000ml, 1 PT 100 temperature sensor, 1 belt, 2 fuses, 1 stirrer (please specify the type of Shaft System) 94-080-0001

- Spare part kit for DT 820 with automatic USP Sampling Station comprising of spare part kit 94-080-0001 and 1 belt, 2 st.steel sampling probes, 2 st.steel return probes and 8 tube connectors 94-080-0002

- Spare part kit for DT 820 with automatic USP Sampling Station and 8 temperature sensor option, incl. 94-080-0002
  94-080-0003

Vessel Centring Rings

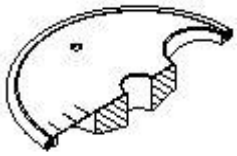
- Vessel-Centring- and –Down-Holding-ring; for all kind of 1000 ml ERWEKA Vessels
  84-060-3000

Vessel Support Plate

- Vessel Support Plate (plastics) with bayonet openings for Vessel-Centring-Ring for ERWEKA Vessels 84-060-1000

Vessel Covers

- V-Shaped vessel covers made of Teflon (instead plastics) for even lower evaporation.



  84-060-0001

- Low-Evaporation Vessel-Cover (1000 ml ERWEKA Vessel) for High-Head use; additional standard V-shaped Vessel-Cover
  84-000-0310

Paddles, Baskets, Discs for Paddle over Disc, Rotating Cylinder and Glassware please see Accessories.

ERWEKA DT 720

6, 7 and 8 stirrer type

ERWEKA DT 720 has been designed with the user in mind: instead of an extensive operation menu structure and multi-functional keys the DT 720 comes with individual displays for each test-run parameter (time, rpm, temperature). UP/DOWN buttons for fast and easy test-run parameter setting are placed. For better observation of the sample dissolving process the one-piece moulded water bath (with standard water outlet cock) is illuminated (optional).
The manual lifter column, with hydraulic support for effortless operation, allows raising and lowering of the drive head in just a few seconds.
Tablets/Pellets etc. are inserted through the sampling openings in the drive head via the standard tablet delivery system. Samples for analysis are withdrawn through special, membrane sealed sampling openings inside the drive head. Evaporation less than 0.3% in Low Head mode and less than 0.7% in High Head mode (24h/37.0°C).
The extensive use of carbon fibre allowed to eliminate metal and therefore reduces the risk of corrosion to a minimum.
The actual test-run parameters can be documented via an USB printer (optional).

- ✓ Easy and comfortable operations: UP/DOWN and START/STOP buttons for test parameter setting as well as individual big and bright LE displays for display
- ✓ Manual Lifter with hydraulic support
- ✓ Low-Head operations (MagniShaft or UniShaft)
- ✓ Low-Head- and High-Head operations (UniShaft only)
- ✓ Quick exchange system for the stirring methods by magnets (MagniShaft)
- ✓ Automatic height adjustment of the stirring elements
- ✓ Video monitoring and recording
- ✓ Automatic vessel centring
- ✓ One-piece leak-free moulded, illuminated (optional) water bath with outlet cock
- ✓ Corrosion-free plate for holding the vessels
- ✓ Evaporation less than 0.3% in Low Head mode and less than 0.7% in High Head mode (24h/37.0°C)
- ✓ External heating system with control by the keypad and LE display of the DT 720; accuracy ± 0.2°C
- ✓ Standard Tablet Drop Magazine for 8 samples. Optional automatic tablet drop with control of temperature tolerance (USP) before drop
- ✓ Internal PT 100 temperature sensor for water bath temperature display
- ✓ Optional external PT 100 temperature sensor for water bath- or media temperature display
- ✓ Optional monitoring of the media temperatures by electronic PT 100 temperature sensors
- ✓ Calibration menu for quick calibration of the 1 or 9 temperature sensors
- ✓ Shaft wobble less than 0.2 mm at delivery
- ✓ Height adjustable feed for levelling
- ✓ Automatic self-check of the temperature in the bath/vessels before test start
- ✓ Hours of operation counter
- ✓ RS 232 serial interfaces for external control
- ✓ Optional USB printer interface for documentation of the test run parameters (time, date, rpm, temperatures etc.) by a standard printer (PCL 3 language)
- ✓ Optional USP Sampling Station with automatic height adjustment of the USP sampling points – to create a Dissolution System
- ✓ Optional video monitoring of six test positions

ERWEKA DT 726
6 test stations, 2 reference positions

For 6 stirring elements and holding 8x 1000 ml vessel

230V/50-60Hz	14-070-6001
115V/60Hz	14-070-6003
127V/60Hz	14-070-6004

ERWEKA DT 727
7 test stations, 1 reference position

For 7 stirring elements and holding 8x 1000 ml vessel; Additional price

230V/50-60Hz	14-070-7001
115V/60Hz	14-070-7003
127V/60Hz	14-070-7004

ERWEKA DT 728
8 test stations

For 8 stirring elements and holding 8x 1000 ml vessel; Additional price

230V/50-60Hz	14-070-8001
115V/60Hz	14-070-8003
127V/60Hz	14-070-8004

2000 ml Version
For holding ERWEKA USP compliant 2000 ml vessels; water bath made from acrylic glass instead mould PET water bath. For UniShaft only (High-Head and/or Low-Head configuration). Additional price 14-1xx-xxxx

Shaft Systems
MagniShaft or UniShaft

DT 720R is available with two different Shaft systems:

1.) MagniShaft for magnetic connection between stirring element and drive or
2.) UniShaft for screw connection.

Both systems comprise of an upper Shaft (inside the drive head) and a lower Shaft to which the Paddle or Basket holder, Transdermal Cylinder (only UniShaft) or Intrinsic Dissolution Kit (only UniShaft) is connected.

While MagniShaft is only available for Low-Head use UniShaft system can be ordered for both, Low-Head- and High-Head use.

MagniShaft is made for simultaneous test start while at UniShaft system the test start can be performed simultaneous or staggered.

While the upper Shaft is generally made from stainless steel the lower parts is mould from Teflon with an integrated stainless steel core. On special request stainless steel stirring elements are available.

All parts are numbered and optionally come with a certificate of USP/EP compliance.

Options

- Automated, simultaneous, tablet drop magazine; Samples are automatically dropped when temperature within the USP specified range. Staggered tablet drop is possible (manually) 84-070-0010

- External electronic temperature sensor PT 100 for display of water bath - or media temperature. Extended instrument menu for one-point calibration routine as well as calibration hard-copy documentation (when equipped with USB printer interface) 84-070-0100

- USB printer interface (PCL 3) for hard-copy documentation of test-run parameters, calibration routines etc. Upgraded electronics (real time watch) and instrument menu (printer settings, time/date settings etc.). 14-07x-xx1x

- Illumination of the water bath by LEDs 84-090-0112

-

Water Stabiliser with colour indicator, 1 bottle 80-080-0002

Funnel

with extension (plastics) for entering granules/powders and/or adding buffer solution through the sampling openings (Low-Head mode) 84-060-1500

Sample Withdraw Systems

- Prepared for upgrade to Sampling Station (without automated sampling station) 14-x8x-x1xx

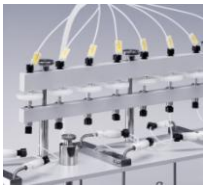
- Additional Sampling Station with stainless steel sampling- and replacement tubes, Teflon tubing, without motor, for use with sampling station drive. 84-070-0115

-
USP/EP/JP compliant Sampling Station with automatic height SP sampling heights. Teflon Tubing **1.6 mm** o.d. 14-x8x-x2xx

-
USP/EP/JP compliant Sampling Station with automatic 16 USP sampling heights. Teflon Tubing **3.0 mm** o.d. 14-x8x-x4xx

-
with 8 additional electronic PT 100 temperature sensors for display and documen- eratures in all vessels, incl. automatic USP Sampling Station, Teflon Tubing **1.6 mm** o.d. 14-x8x-x6xx

-
with 8 additional electronic PT 100 temperature sensors for display and documen- ratures in all vessels, incl. automatic USP Sampling Station, Teflon Tubing **3.0 mm** o.d. 14-x8x-x9xx


Additional price for Double Filtration station for holding membrane filters 84-070-0955

- Titanium sampling- and replacement probes (corrosion-free) instead of stainless steel probes, at additional cost
  80-090-0200

- Cleaning reservoir (acrylic glass) with 3 separate compartments for cleaning of DT 720/820 sampling stations. The 3 compartments eliminate any possibility of contamination 80-089-0000

-
  Electronic Calibration Kit for PT 100 temperature sensor/s.
  This kit allows fast calibration of the external electronic PT 100 temperature sensor as well as the 8 additional temperature sensors without the use of water.
  This not only eliminates the need of preheated water, it also saves up to 95% of the time needed 10-092-0001

Spare Part Kits

- Spare part kit for DT 720 comprising of 1 paddle with shaft, 1 centring ring, 1 vessel 1000ml, 1 belt, 2 fuses, 1 stirrer (please specify the type of Shaft System)
  94-070-0001

- Spare part kit for DT 720 with automatic USP Sampling Station comprising of spare part kit 94-070-0001, 2 st.steel sampling probes, 2 st.steel return probes and 8 tube connectors 94-070-0002

- Spare part kit for DT 720 with automatic USP Sampling Station and 8 temperature sensor option, incl. 94-070-0002
  94-070-0003

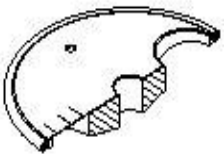
Vessel Centring Rings

- Vessel-Centring-Ring and Down-Holding-Ring; for all kind of 1000 ml ERWEKA Vessels 84-060-3000

Vessel Support Plate

- Vessel Support Plate (plastics) with bayonet openings for Vessel-Centring-Rings for ERWEKA Vessels 84-060-1000

Vessel Covers

- V-Shaped vessel Covers made of Teflon (instead Delrin) for even lower evaporation
  
  94-060-0001

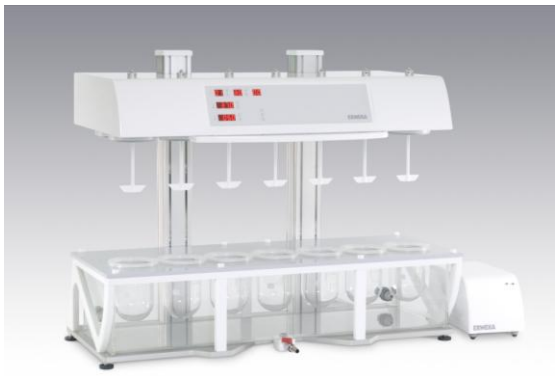
- Low-Evaporation Vessel-Cover (1000 ml ERWEKA Vessel) for High-Head use; additional To standard V-shaped Vessel-Cover

  84-000-0310

Paddles, Baskets, Discs for Paddle over Disc, Rotating Cylinder and Glassware please see Accessories.

ERWEKA DT 720R

6 and 7 stirrer type



ERWEKA DT 720R is based on the DT 720 user interface (keypad/displays), but fitted with 7 vessels (6 or 7 stirrers) in one row for easy access, e.g. for manual sample withdraw. The unit is available with video monitoring and recording for 6 test stations as well as with vessel capacities of 250 ml, 1000 ml or 2000 ml (special request).

- ✓ Easy and comfortable operations: UP/DOWN and START/STOP buttons for test parameter setting as well as individual big and bright LE displays for display
- ✓ Manual Lifter with hydraulic support
- ✓ Low-Head operations (MagniShaft)
- ✓ Low-Head- and High-Head operations (UniShaft)
- ✓ Quick exchange system for the stirring methods by magnets (MagniShaft- or UniShaft)
- ✓ Automatic height adjustment of the stirring elements
- ✓ Automatic vessel centering
- ✓ Acrylic glass water bath
- ✓ Corrosion-free plate for holding the vessels
- ✓ Evaporation less than 0.3% in Low Head mode and less than 0.7% in High Head mode (24h/37.0°C)
- ✓ External heating system with control by the keypad and LE display of the DT 720R; accuracy ± 0.2°C
- ✓ Standard Tablet Drop Magazine for 8 samples. Optional automatic tablet drop with control of temperature tolerance (USP) before drop
- ✓ Internal PT 100 temperature sensor for water bath temperature display
- ✓ Optional external PT 100 temperature sensor for water bath- or media temperature display
- ✓ Optional monitoring of the media temperatures by electronic PT 100 temperature sensors
- ✓ Calibration menu for quick calibration of the 1 or 9 temperature sensors
- ✓ Shaft wobble less than 0.2 mm at delivery
- ✓ Height adjustable feed for levelling
- ✓ Automatic self-check of the temperature in the bath/vessels before test start
- ✓ Hours of operation counter
- ✓ RS 232 serial interfaces for external control
- ✓ Optional USB printer interface for documentation of the test run parameters (time, date, rpm, temperatures etc.) by a standard printer (PCL 3 language)
- ✓ Optional USP Sampling Station with automatic height adjustment of the USP sampling points – to create a Dissolution System
- ✓ Optional video monitoring of six test positions

ERWEKA DT 726R

6 test stations, 1 reference positions

For 6 stirring elements and holding
7x 1000 ml vessel

230V/50-60Hz	14-050-6001
115V/60Hz	14-050-6003
127V/60Hz	14-050-6004

ERWEKA DT 727R

7 test stations, without reference position

For 7 stirring elements and holding
7x 1000 ml vessel; Additional price

230V/50-60Hz	14-050-7001
115V/60Hz	14-050-7003
127V/60Hz	14-050-7004

Shaft Systems

MagniShaft or UniShaft

DT 720R is available with two different Shaft systems:

1.) MagniShaft for magnetic connection between stirring element and drive or
2.) UniShaft for screw connection.

Both systems comprise of an upper Shaft (inside the drive head) and a lower Shaft to which the Paddle or Basket holder, Transdermal Cylinder (only UniShaft) or Intrinsic Dissolution Kit (only UniShaft) is connected.

While MagniShaft is only available for Low-Head use UniShaft system can be ordered for both, Low-Head- and High-Head use.

MagniShaft is made for simultaneous test start while at UniShaft system the test start can be performed simultaneous or staggered.

While the upper Shaft is generally made from stainless steel the lower parts is mould from Teflon with an integrated stainless steel core. On special request stainless steel stirring elements are available.

All parts are numbered and optionally come with a certificate of USP/EP compliance.

Options

- Automated, simultaneous, tablet drop magazine for DT 720 R; Samples are automatically dropped when temperature within the USP specified range. Staggered tablet drop is possible (manually)
  84-070-0010

- External electronic temperature sensor PT 100 for display of water bath - or media temperature. Extended instrument menu for one-point calibration routine as well as calibration hard-copy documentation (when equipped with USB printer interface)
  84-070-0100

- USB printer interface (PCL 3) for hard-copy documentation of test-run parameters, calibration routines etc. Upgraded electronics (real time watch) and instrument menu (printer settings, time/date settings etc.) 14-07x-xx1x

-

  Water Stabiliser with colour indicator, 1 bottle
  80-080-0002

Funnel

with extension (plastics) for entering granules/powders and/or adding buffer solution through the sampling openings (Low-Head mode) 84-060-1500

Spare Part Kits

- Spare part kit for DT 720R comprising of 1 paddle with shaft, 1 PT100 temperature sensor, 1 centring ring, 1 vessel 1000ml, 1 belt, 2 fuses, 1 stirrer (please specify the type of Shaft System)
  94-070-0001

- Spare part kit for DT 720R with automatic USP Sampling Station comprising of spare part kit 94-070-0001, 2 st.steel sampling probes, 2 st.steel return probes and 8 tube connectors 94-070-0002

- Spare part kit for DT 720 R with automatic USP Sampling Station and 8 temperature sensor option, incl. 94-070-0002
  94-070-0003

Vessel Centring Rings

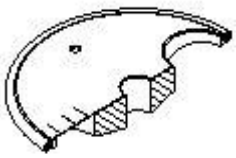
- Vessel-Centring- and –Down-Holding-Ring; for all kind of 1000 ml ERWEKA Vessels 84-060-3000

Vessel Support Plate

- Vessel Support Plate (plastics) with bayonet openings for Vessel-Centring-Rings for ERWEKA Vessels 84-060-1000

Vessel Covers

- V-Shaped vessel Covers made of Teflon (instead Delrin) for even lower evaporation



94-060-0001

- Low-Evaporation Vessel-Cover (1000 ml ERWEKA Vessel) for High-Head use; additional to standard V-shaped Vessel-Cover

84-000-0310

Paddles, Baskets, Discs for Paddle over Disc, Rotating Cylinder and Glassware please see Accessories.

ERWEKA DT 720-4000

6 or 7 stirrer type

ERWEKA DT 720-4000 High-Head is based on the DT 720 user interface (keypad / displays), but fitted with 7 vessels (6 or 7 stirrers) of 4000 ml capacity.

- ✓ Easy and comfortable operations: UP/DOWN and START/STOP buttons for test parameter setting as well as individual big and bright LE displays for display
- ✓ Manual lifters with hydraulic support
- ✓ High-head operations (UniShaft)
- ✓ Quick exchange system for the stirring methods by screw system
- ✓ Automatic height adjustment of the stirring elements
- ✓ Vessel centring tools
- ✓ Acrylic glass water bath
- ✓ Corrosion-free plate for holding the vessels
- ✓ External heating system with control by the keypad and LE display of the DT 720R; accuracy ± 0.2°C
- ✓ Internal PT 100 temperature sensor for water bath temperature display
- ✓ Optional external PT 100 temperature sensor for water bath- or media temperature display
- ✓ Calibration menu for quick calibration of the temperature sensor/s
- ✓ Shaft wobble less than 0.2 mm at delivery
- ✓ Height adjustable feed for levelling
- ✓ Hours of operation counter
- ✓ Optional USB printer interface for documentation of the test run parameters (time, date, rpm, temperatures etc.) by a standard printer (PCL 3 language)

ERWEKA DT 726 HH - 4000

6 test stations, 1 reference position; for UniShaft only

For 6 stirring elements and holding 7x4000 ml vessel

230V/50-60Hz	14-074-6001
115V/60Hz	14-074-6003
127V/60Hz	14-074-6004

ERWEKA DT 727 HH - 4000

7 test stations; for UniShaft only

For 7 stirring elements and holding 7x4000 ml vessel; Additional price

230V/50-60Hz	14-074-7001
115V/60Hz	14-074-7003
127V/60Hz	14-074-7004

Shaft System

UniShaft

The DT 720-4000, due to its High-Head operation, comes with the ERWEKA UniShaft system.

The system comprises of an upper Shaft (inside the drive head) and a lower Shaft to which the Paddle or Basket holder is connected.

All parts are numbered and optionally come with a certificate of USP/EP compliance.

Options

- External electronic temperature sensor PT 100 for display of water bath - or media temperature. Extended instrument menu for one-point calibration routine as well as calibration hard-copy documentation (when equipped with USB printer interface) 84-070-0100

- USB printer interface (PCL 3) for hard-copy documentation of test-run parameters, calibration routines etc. Upgraded electronics (real time watch) and instrument menu (printer settings, time/date settings etc.) 14-07x-xx1x

-

Water Stabiliser with colour indicator, 1 bottle 80-080-0002

Sample Withdraw System

- Sampling and replacement probes (set of 7 probes, st.steel), fix in the media, manual height adjustment. Teflon tubing 1.6 or 3.0 mm outside diameter 14-x74-x2xx

- Sampling and replacement probes (set of 7 probes, Titanium), fix in the media, manual height adjustment. Teflon tubing 1.6 or 3.0 mm outside diameter 14-x74-x4xx

Spare Part Kits

- Spare part kit for DT 720-4000 comprising of 1 paddle with shaft, 1 centring ring, 1 vessel 4000ml, 1 belt, 2 fuses, 1 stirrer (please specify the type of Shaft System) 94-074-0001

Vessel Support Plate

- Vessel Support Plate (plastics) for Vessel-Centring-Rings for ERWEKA 4000 ml Vessels 84-074-1000

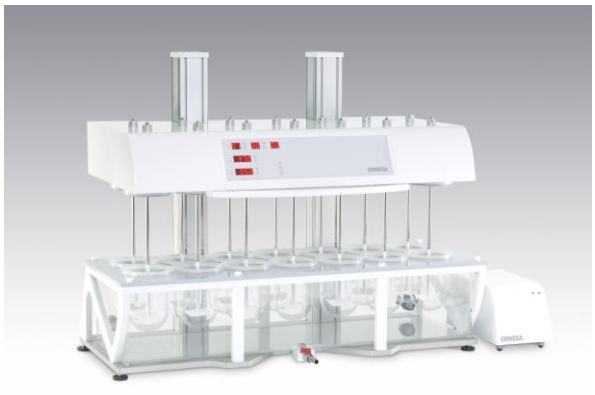
Vessel Covers

- Low-Evaporation Vessel-Cover (4000 ml ERWEKA Vessel) for High-Head use 84-000-0312

Paddles, Baskets, Discs for Paddle over Disc, Rotating Cylinder and Glassware please see Accessories.

ERWEKA DT 1420

12, 13 and 14 stirrer type



ERWEKA DT 1420 is based on DT 720 user interface (DT 1420i is based on DT 820 user interface), but fitted with 14 Vessels arranged in two rows (12, 13 or 14 stirrers).
The DT 1420 offers the possibility for one test with 12/13/14 tablets or two tests with 6/7 tablets. This enables the user to carry out stage 2 USP tests within one bath at equal test conditions.

- ✓ Easy and comfortable operations: UP/DOWN and START/STOP buttons for test parameter setting as well as individual big and bright LE displays for display
- ✓ Manual Lifter with hydraulic support
- ✓ Low-Head operations (MagniShaft)
- ✓ Low-Head- and High-Head operations (UniShaft)
- ✓ Quick exchange system for the stirring methods by magnets (MagniShaft)
- ✓ Automatic height adjustment of the stirring elements
- ✓ Automatic vessel centering
- ✓ Acrylic glass water bath
- ✓ Corrosion-free plate for holding the vessels
- ✓ Evaporation less than 0.3% in Low Head mode and less than 0.7% in High Head mode (24h/37.0°C)
- ✓ External heating system with control by the keypad and LE display of the DT 1420; accuracy ± 0.2°C
- ✓ Standard Tablet Drop Magazine for 14 samples. Optional automatic tablet drop with control of temperature tolerance (USP) before drop
- ✓ Internal PT 100 temperature sensor for water bath temperature display
- ✓ Optional external PT 100 temperature sensor for water bath- or media temperature display
- ✓ Calibration menu for quick calibration of the temperature sensors
- ✓ Shaft wobble less than 0.2 mm at delivery
- ✓ Height adjustable feed for levelling
- ✓ Automatic self-check of the temperature in the bath/vessels before test start
- ✓ Hours of operation counter
- ✓ USB interface for external control
- ✓ Optional USB printer interface for documentation of the test run parameters (time, date, rpm, temperatures etc.) by a standard printer (PCL 3 language)

ERWEKA DT 1420

12 test stations, 2 reference positions

For 12 stirring elements and holding 14x 1000 ml vessel

230V/50-60Hz	14-014-1201
115V/60Hz	14-014-1203
127V/60Hz	14-014-1204

ERWEKA DT 1420

13 test stations, 1 reference position

For 13 stirring elements and holding 14x 1000 ml vessel; Additional price

230V/50-60Hz	14-014-1301
115V/60Hz	14-014-1303
127V/60Hz	14-014-1304

ERWEKA DT 1420

14 test stations

For 14 stirring elements and holding 14x 1000 ml vessel; Additional price

230V/50-60Hz	14-014-1401
115V/60Hz	14-014-1403
127V/60Hz	14-014-1404

Shaft Systems

MagniShaft or UniShaft

DT 1420 is available with two different Shaft systems:

1.) MagniShaft for magnetic connection between stirring element and drive or
2.) UniShaft for screw connection.

Both systems comprise of an upper Shaft (inside the drive head) and a lower Shaft to which the Paddle or Basket holder, Transdermal Cylinder (only UniShaft) or Intrinsic Dissolution Kit (only UniShaft) is connected.

While MagniShaft is only available for Low-Head use UniShaft system can be ordered for both, Low-Head- and High-Head use.

MagniShaft is made for simultaneous test start while at UniShaft system the test start can be performed simultaneous or staggered. While the upper Shaft is generally made from stainless steel the lower parts is mould from Teflon with an integrated stainless steel core. On special request stainless steel stirring elements are available.

All parts are numbered and optionally come with a certificate of USP/EP compliance.

Options

- Automated Tablet Drop Magazine with temperature control before drop. All samples will be dropped simultaneously
  84-070-0100

- External electronic temperature sensor PT 100 for display of water bath - or media temperature. Extended instrument menu for one-point calibration routine as well as calibration hard-copy documentation (when equipped with USB printer interface)
  84-070-0010

- USB printer interface (PCL 3) for hard-copy documentation of test-run parameters, calibration routines etc. Upgraded electronics (real time watch) and instrument menu (printer settings, time/date settings etc.) 14-07x-xx1x

-

  Water Stabiliser with colour indicator, 1 bottle
  80-080-0002

Funnel

With extension (plastics) for entering granules/powders and/or adding buffer solution through the sampling openings (Low-Head mode) 84-060-1500

Spare Part Kits

- Spare part kit for DT 1420 comprising of 1 paddle with shaft, 1 centring ring, 1 vessel 1000ml, 1 belt, 2 fuses, 1 stirrer (please specify the type of Shaft System)
  94-070-0001

Vessel Centring Rings

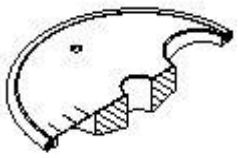
- Vessel-Centring-Ring and Down-Holding-Ring; for all kind of 1000 ml ERWEKA Vessels 84-060-3000

Vessel Support Plate

- Vessel Support Plate (plastics) with bayonet openings for Vessel-Centring-Rings for ERWEKA Vessels 84-060-1000

Vessel Covers

- V-Shaped vessel Covers made of Teflon (instead Delrin) for even lower evaporation



94-060-0001

- Low-Evaporation Vessel-Cover (1000 ml ERWEKA Vessel) for High-Head use; additional to standard V-shaped Vessel-Cover

84-000-0310

Paddles, Baskets, Discs for Paddle over Disc, Rotating Cylinder and Glassware please see Accessories.

ERWEKA DT 620 High-Head

6 stirrer type, 1000 and 2000 ml version

The basic ERWEKA stand-alone Dissolution Tester for all Laboratories and Universities where high quality is required but the budget is limited. The unit has the same quality than any other ERWEKA Dissolution Tester but it is downgraded in respects of comfort and electronics.
The user interface, water bath, heating system, metal-free construction is similar to the DT 720 series but instead the DT 620 uses a fix drive head in High-Head operation position and therefore only the UniShaft screw system Shafts

The DT 620 is designed for holding 6 vessels and comes with 6 drives.

- ✓ Easy and comfortable operations: UP/DOWN and START/STOP buttons for test parameter setting as well as individual big and bright LE displays for display
- ✓ Fix drive-head
- ✓ High-Head operations (UniShaft)
- ✓ Quick exchange system for the stirring methods by screw system
- ✓ Automatic height adjustment of the stirring elements
- ✓ „Low Evaporation Vessel Cover“ less than 0.7% (24h/37.0°C)
- ✓ Automatic vessel centring
- ✓ One-piece leak-free moulded, illuminated (optional) water bath
- ✓ Corrosion-free plate for holding the vessels
- ✓ External heating system with control by the keypad and LE display of the DT 720; accuracy ± 0.2°C
- ✓ Internal PT 100 temperature sensor for water bath temperature display
- ✓ Calibration menu for quick calibration of the temperature sensor
- ✓ Shaft wobble less than 0.2 mm at delivery
- ✓ Height adjustable feed for levelling
- ✓ Automatic self-check of the temperature in the bath before test start
- ✓ Hours of operation counter
- ✓ Optional sample withdraw and replacement tubes from stainless steel or Titanium to create a Dissolution System

ERWEKA DT 626

6 test stations

This bath allows easy access for manual sampling due to the arrangement of the test stations in U-shape. For holding 6x 1000 ml Vessel

230V/50Hz	14-060-6001
230V/60Hz	14-060-6002
115V/60Hz	14-060-6003
127V/60Hz	14-060-6004

ERWEKA DT 626-2000

6 test stations

Similar to DT 626/ 1000 but for holding USP round-bottomed glass vessels 1.000 ml and 2.000 ml. Water bath made from acrylic glass.

230V/50Hz	14-160-6001
230V/60Hz	14-160-6002
115V/60Hz	14-160-6003
127V/60Hz	14-160-6004

Options

- Drain valve on the bottom of the water bath 84-060-xx1x
- Illumination of the water bath by LEDs 14-090-6001
- Sampling and replacement probes (set of 6 probes, st.steel), fix in the media, manual height adjustment. Teflon tubing 1.6 or 3.0 mm outside diameter (High-Head version 1000 ml only) 14-06x-x6xx
- Sampling and replacement probes (set of 6 probes, st.steel), fix in the media, manual height adjustment. Teflon tubing 1.6 or 3.0 mm outside diameter (High-Head version 2000 ml only) 14-16x-x6xx
- Water Stabiliser with colour indicator, 1 bottle 80-080-0002

Spare Part Kit

- Spare part kit comprising of 1 shaft, 1 vessel, 1 belt, 2 fuses, 1 stirrer 1000 ml version. 94-060-0001
- Spare part kit comprising of 1 shaft, 1 vessel, 1 belt, 2 fuses, 1 stirrer 2000 ml version. 94-160-0001

Vessel Centring Rings

- Vessel-Centring- and –Down-Holding-Ring; for all kind of 1000 ml and 2000 ml ERWEKA Vessels 84-060-3000

Vessel Support Plate

- Vessel Support Plate (plastics) with bayonet openings for Vessel-Centring-Rings for ERWEKA 1000 and 2000 ml Vessels 84-060-1000

Vessel Covers

- Low-Evaporation Vessel-Cover (1000 ml and 2000 ml ERWEKA Vessel)

84-000-0310

Paddles, Baskets, Discs for Paddle over Disc, Rotating Cylinder and Glassware please see Accessories.

Components, Pumps

1. Sample Transfer Pump

1.1. Transfer Pump IPC 8

(8-channel Peristaltic Pump)

With the standard ERWEKA 8-channel Peristaltic Pump (IPC 8) the sample is taken from the test vessel and transferred to the Autosampler or flow-through cells of the spectrophotometer.

Pump tubing's are made of Verderprene (similar to Teflon) to prevent the absorption previously associated with peristaltic pumps and PVC tubing.

Via the serial RS 232 interface the pump is controlled from the external PC.

- ✓ 8-channel Peristaltic Pump
- ✓ RS 232 serial interface for external control
- ✓ Touch sensitive keys and LC display
- ✓ Verderprene tubing for elimination of absorption of active ingredients by PVC tubing

11-202-5001

- Additional price set of verderprene tubing for IPC 8 91-202-5001

1.2. Transfer Pump IPC 16

(16-channel Peristaltic Pump)

With the standard ERWEKA 16-channel Peristaltic Pump (IPC 16) the sample is taken from the test vessel and transferred to the Autosampler or flow-through cells of the spectrophotometer.

Pump tubing's are made of Verderprene (similar to Teflon) to prevent the absorption previously associated with peristaltic pumps and PVC tubing.

Via the serial RS 232 interface the pump is controlled from the external PC.

- ✓ 16-channel Peristaltic Pump
- ✓ RS 232 serial interface for external control
- ✓ Touch sensitive keys and LC display
- ✓ Verderprene tubing for elimination of absorption of active ingredients by PVC tubing

11-202-5002

- Additional price set of verderprene tubing for IPC 16 91-202-5002

1.3. Transfer Pump, SP 725/10

(7-channel Syringe Pump)

The ERWEKA 7-channel Syringe Pump, Type SP 725/10 with 10 ml syringes is the ideal media transfer pump for the Offline Dissolution Systems with collection volumes of up to 5.0 ml.

It offers very accurate volume flow, elimination of absorption (glass/Teflon) and high flexibility due to an electric 4-way valve at the in-/outlet of each syringe. This allows sampling, media replacement and even dilution with one Dissolution Tester using only one pump!

The SP 725/10 is equipped with a RS 232 interface for control by the upgraded programme menu ("i"-version) of ERWEKA DT 820 Dissolution Testers or Disso.net software.

- ✓ 7-channel (optional 8-channel) Syringe Pump
- ✓ Absorption free
- ✓ Syringes 10 ml
- ✓ Accuracy of volume ± 0.2 ml
- ✓ Sampling intervals from 2 minutes
- ✓ Automatic cleaning on completion/between the sampling intervals available
- ✓ Teflon tubing

SP 725/10, 7-channel version
11-200-7001

SP 825/10, 8-channel version
11-200-8001

1.4. Transfer Pump, SP 725/25

(7-channel Syringe Pump)

The ERWEKA 7-channel Syringe Pump, Type SP 725/25 with 25 ml syringes is the ideal media transfer pump for the Offline Dissolution Systems, especially when collection of more than 5.0 ml is required as well as for "Dual" Offline Systems and all kind of Online- and Off-/Online Systems.

It offers very accurate volume flow, elimination of absorption (glass/Teflon) and high flexibility due to an electric 4-way valve at the in-/outlet of each syringe. This allows sampling, media replacement and even dilution with one Dissolution Tester using only one pump!

The SP 725/25 is equipped with a RS 232 interface for control by the upgraded programme menu ("i"-version) of ERWEKA DT 820 Dissolution Testers.

- ✓ 7-channel (optional 8-channel) Syringe Pump
- ✓ Absorption free
- ✓ Syringes 25 ml
- ✓ Accuracy of volume ± 0.2 ml
- ✓ Sampling intervals from 2 minutes
- ✓ Automatic cleaning on completion/between the sampling intervals available
- ✓ Teflon tubing

SP 725/25, 7-channel version
11-200-7011

SP 825/25, 8-channel version
11-200-8011

1.5. Transfer Pump PVP 720

(7-channel Piston Pump)

7-channel (optional 8-channel) high pressure, valve free Teflon/Ceramics Piston Pump for all Dissolutions Systems which require membrane filtration below 1 µm (dependant on the product this pump allows filtration down to 0.22µm)

High dosage accuracy (± 0.5 ml) and fast operation (sampling intervals from 2 minutes) in combination with FRL 724/824 Fraction Collectors.

PVP 720, 7-channel piston pump
11-312-1201

PVP 820, 8-channel piston pump
11-312-1211

2. Autosampler

2.1. Autosampler, FRL 720

Valve-free Autosampler for 7-, 8 or 14 channel operation

The 7-channel FRL 720 with x/y-driven sampling arm was designed for silent operation and maximum corrosion resistance.

To archive that the unit is mainly made from corrosion free materials such as alloy and plastics and features a gentle and precise spindle drive.

The alloy rack-holder is made to carry various racks (glass tubes of 10 ml and 25 ml capacity as well as HPLC vials of 1.5 ml and 4.0 ml maximum volume) to store max. 25 sampling intervals of 8 vessels or 12 sampling intervals of 14 test stations (FRL 720-2 version to operate with DT 1420). For temperature sensitive samples a cooled rack for HPLC vials is available.

HPLC membrane piercing is realised by using a 2nd spindle drive of the y-axis of the sampling arm. The high-torque gear allows piercing of either split- or even none-split septum.

The medium replacement (if equipped) is performed by a 2-part container of which the replacement media section is constantly refilled by two 1-channel peristaltic pumps from an external heated or unheated flask. This feature permits a) nearly unlimited amount of replacement media and b) sucking from a heated container not to lower the media temperature inside the test station by cold replacement media.

In standard configuration the 7 filling-tubes are made of 316 stainless steel but also are available from Titanium to eliminate any possibility of corrosion even inside the tubes.

For 8-channel operation the FRL 820, for 14-channel operation the FRL 720-2 are available.

In combination with an ERWEKA SP syringe pump and an optional 3-part container (instead standard 2-part) the Autosampler 720 allows dilution of the collected samples with an accuracy of ± 0.1 ml. Therefore, in combination with 10 ml or 25 ml glass tubes, a 1:1, 1:2, 1:5 or even 1:10 dilution can be obtained.

While in combination with a syringe pump the precise dosing of the collected sample is archived by the syringe, at the “BUDGET” and “BASE” Offline Systems (peristaltic pump) the FRL 720 is responsible for the dosing accuracy itself: the glass tubes are overfilled with media – then the stainless steel filling tubes move down to the height level of the desired sample amount and returns the sample above this level back to the vessel inside the dissolution tester.

15-207-1000

- Additional price 8-channel version, FRL 820 15-208-1000
- Additional price 14-channel version, FRL 720-2 15-214-1000
- Additional price media replacement (incl. two 1-channel peristaltic pumps, 2-part acrylic glass container and replacement routine) 15-2xx-x1xx
- Additional price media replacement and automated dilution (incl. two 1-channel peristaltic pumps, 3-part acrylic glass container and replacement-/dilution routine) 15-2x7-x2xx
- Additional price for Titanium filling tubes (instead 316 stainless steel); for FRL 720 15-207-xx1x
- Additional price for Titanium filling tubes (instead 316 stainless steel); for FRL 820 15-208-xx1x
- Additional price for Titanium filling tubes (instead 316 stainless steel); for FRL 720-2 15-214-xx1x

2.2. Autosampler, FRL 724

7-, 8- or 14-channel Autosampler with integrated valves

The 7-channel FRL 724 – with one solenoid 3-way-valve per channel and x/y-driven sampling arm – was designed for silent operation and maximum corrosion resistance in combination with either the peristaltic- or piston pump for “stirrer type” dissolution testers as well as in combination with an USP 4 Offline system.

To archive silent operation as well as corrosion resistance, the unit is mainly made from corrosion free materials such as alloy and plastics and features a gentle and precise spindle drive.

The integrated 3-way solenoid valves, in combination with a “stirrer-type” dissolution system allow accurate dosing (± 0.5 ml) when using peristaltic- or piston pump. The medium is pumped in a close loop from the vessel back to the vessel until the tubing is completely filled and only then the valve switched to collect the sample into glass tubes or HPLC vials.
In combination with an USP 4 “Flow-Through-Cell” Offline System the 3-way-valves operate as a “splitter” to collect an average of the flow-through. The spindle drive, especially with USP 4 systems, is a big advantage since the arm of the Autosampler can be precisely moved from row to row without returning to the zero-position in between.

The alloy rack-holder is made to carry various racks (glass tubes of 10 ml and 25 ml capacity as well as HPLC vials of 1.5 ml and 4.0 ml maximum volume) to store max. 25 sampling intervals of 8 vessels or 12 sampling intervals of 14 test stations (FRL 724-2 version to operate with DT 1420). For temperature sensitive samples a cooled rack for HPLC vials is available.

HPLC membrane piercing is realised by using a 2nd spindle drive of the y-axis of the sampling arm. The high-torque gear allows piercing of either split- or even none-split septum.

The medium replacement (if equipped) is performed by a 2-part container of which the replacement media section is constantly refilled by two 1-channel peristaltic pumps from an external heated or unheated flask. This feature permits a) nearly unlimited amount of replacement media and b) sucking from a heated container not to lower the media temperature inside the test station by cold replacement media.
15-207-2000

- Additional price 8-channel version, FRL 824
  15-208-2000
- Additional price 14-channel version, FRL 724-2
  15-214-2000
- Additional price media replacement (incl. two 1-channel peristaltic pumps, 2-part acrylic glass container and replacement routine)
  15-208-x1xx
- Additional price for Titanium filling tubes (instead 316 stainless steel); for FRL 724
  15-207-xx1x
- Additional price for Titanium filling tubes (instead 316 stainless steel); for FRL 824
  15-208-xx1x
- Additional price for Titanium filling tubes (instead 316 stainless steel); for FRL 724-2
  15-214-xx1x

Options

2.3 Racks for Autosampler

- Rack for 25x 8, for HPLC vials of 1.5 ml volume 81-200-0001
- Rack for 25x 8, for HPLC vials of 4.0 ml volume 81-200-0002
- Rack for 24x 8, with glass tubes of 10 ml volume 81-200-0003
- Rack for 17x 8, with glass tubes of 25 ml volume 81-200-0004

2.4 Heating device for the substitute media

In order to stay within the temperature tolerance when replacing large quantities of media, it is necessary to use pre-heated media. The ERWEKA heating device allows a temperature-controlled pre-heating of the media, before it is pumped into the media replacement container.

Separate container with approx. 4.000 ml vessel for pre – heated media reservoir.

- Thermostat for keeping the required temp. of 37° C, accuracy + - 0,5 °C, within the container.
- Retrofitting the fraction collector with the Peristaltic Pump. Reworking the housing, connecting tubing etc.
- Changed the PCB within the fraction collector.
- EPROM update in the Dissolution tester.

80-20x-2000

- Temperature documentation at the DT (of the pre-heated substitute media) 80-20x-2001

3.1. Filter Changer, AFC 825

(8-channel membrane filter changer)

The automated ERWEKA Filter Change Station AFC 825 was specially designed for Dissolution Offline and UV/HPLC Online Systems to change filters after or during the test run automatically. Changing filters during the test procedure (i.e. after each sampling interval) is essential when the withdrawn media trends to block the filters. The ERWEKA AFC 825 includes a magazine for up to 8x 25 filter holders for membrane filters.

100 – 240 Volt, 50/60Hz 12-085-0825

3.2. Filter Changer AFC 825 with 3 way-valves

The use of 3 way-valves enables the user to bypass the filter system, when required (e.g. for media replacement). Additional price

- AFC 825 - 16 V (for 8 stations)
  100 - 240 Volt; 50/60 Hz 82-085-0826
- AFC 825 – 14 V (for 7 stations)
  100 - 240 Volt; 50/60 Hz 82-085-0827
- AFC 825 – 12 V (for 6 stations)
  100 - 240 Volt; 50/60 Hz 82-085-0828

Options

- 200 pcs. of 1.0 µm membrane filters ROBY including filter holders 82-085-0101
- 200 pcs. of 0.70 µm membrane filters ROBY including filter holders 82-085-0102
- 200 pcs. of 0,45 µm membrane filters ROBY including filter holders 82-085-0103

4. Automatic pH Changer, AMC-A

The AMC-A is a device for the automated pH change according to USP method “A” (half-change).
The accurate amount (volume) of buffer solution is dosed into the 8 glass vessels (max. 250 ml capacity) which are located inside a thermostatically heated acrylic water bath.
In combination with the DT 820 where the pH change time point is set/programmed the operation is fully automated: the stirring action is stopped and the 8 pumps, integrated into the AMC-A, transfer the buffer solution from the AMC-A into the vessels of the Dissolution Tester. When the pre-set time limit of pH change is reached (default setting 5 minutes according to USP) the stirring action is re-started.
Using any other Dissolution Tester the operation is semi-automatic. The stirring action has to be stopped, by pressing a knob at the AMC-A the buffer solution transfer is started and when the pH change time limit is reached the stirring action has to be re-started.

230V/50Hz	80-xx0-x001
230V/60Hz	80-xx0-x002
115V/60Hz	80-xx0-x003
127V/60Hz	80-xx0-x004

5. Computer

- PC with 17” TFT monitor, colour printer etc. 70-203-5555

6. System Software

- Disso.net (UV-VIS Online, Perkin Elmer and Shimadzu only) 51-203-0000

7. UV-VIS Spectrophotometer (only)

-

ERWEKA SPM-8, Dissolution ready
70-209-9000

ERWEKA SPM-16, Dissolution ready
70-209-9002

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Perkin Elmer Lambda 25-8, Win Lab 2
70-204-9000

Perkin Elmer Lambda 25-8, Win Lab 5
70-204-9001

Perkin Elmer Lambda 25-16, Win Lab 2
70-204-9002

Perkin Elmer Lambda 25-16, Win Lab 5
70-204-9003

Perkin Elmer Lambda 35-8, Win Lab 5
70-204-9004

Perkin Elmer Lambda 35-16, Win Lab 5
70-204-9005

-

70-205-9005
Shimadzu 1800

-

70-207-9000
Agilent 8453, Dissolution-ready

- 70-208-9000
Analytic Jena Specord 205, Dissolution ready

8. Tubing + Connectors

- Tubing + Connectors UV-VIS Online
  70-20x-0001
- Tubing + Connectors UV – VIS Dual Online
  70-20x-0002
- Tubing + Connectors UV – VIS Off-/Online
  70-20x-0003

9. Pre Configuration

- Pre Configuration Offline, with FRL 720
  70-xxx-0000
- Pre Configuration Offline, with FRL 724
  70-xxx-0000
- Pre Configuration Offline, with FRL 720-2
  70-xxx-0000
- Pre Configuration Offline, with FRL 724-2
  70-xxx-0000
- Pre Configuration “Dual” Offline
  70-xxx-0000
- Pre Configuration UV-VIS Online
  70-20x-0004
- Pre Configuration UV-VIS Dual Online
  70-20x-0005
- Pre Configuration UV-VIS Off-/Online
  70-20x-0006

10.Valve Box

- Valve Box for UV-VIS Off-/Online

230V/50Hz	80-206-0001
230V/60Hz	80-206-0002
115V/60Hz	80-206-0003
127V/60Hz	80-206-0004

Dissolution Offline-Kits

“BUDGET” Kit
(storage/doses into tubes only)

The “BUDGET” Offline Kit with fixed stainless steel sample withdraw tubes to collect into glass tubes of 10 ml or 25 ml is designed to serve those customers with a limited budget and comprises of

1.) 7 stainless steel (316), electro polished, height adjustable sampling tubes (fix inside the medium) with external holder for filters
2.) 8-channel Peristaltic pump with Verderprene tubing and RS 232 interface for external control
3.) FRL 720 7-channel “silent” Autosampler with x/y driven arm in “corrosion reduced design” for collection of up to 25 sampling intervals into 10 ml glass tubes or 17 sampling intervals into 25 ml glass tubes as well as support arm to hold a rack.
4.) Tubing/Connector Kit, Teflon
5.) System pre-configuration
6.) Upgraded micro-controller for DT 820 series to control the complete Offline System

Not included: DT 820 dissolution tester and collection rack (for glass tubes only)

Operation principle:
The stainless steel (optional Titanium) sample withdraw tubes are fix installed inside the vessel and can be manually height adjusted (midway between the top of the media and the top of the rotating basket or paddle). For filtration purposes a filter can be inserted into a filter holder positioned at the connection of sample withdraw tube and Teflon system tubing thus to minimize influences to the hydrodynamics inside the vessel.

The connected pump (8-channel peristaltic pump) transfers the sample to collect from the vessel into glass tubes (10 ml or 25 ml maximum capacity) positioned in the rack at the Autosampler.

For more precise dosing – after collection – the x/y driven arm moves down to a selected sample volume level and pumps back the sample above this level to the dissolution vessel (overfilling/levelling principle).

To minimize cross-contamination between of the media of various sampling intervals there is an automated tube cleaning routine between the sampling intervals.

“BUDGET” Offline Kit, 7-channel
15-107-0000

- Additional price for 8-channel version
  15-1x8-xxxx
- Additional price for Titanium sample withdraw tubes, instead stainless steel
  15-xxx-1xxx
- Additional price for Titanium collection tubes in the Autosampler, instead st.steel
  15-xxx-x2xx
- Rack for holding 25x 8 glass tubes, 10 ml
  81-200-0003
- Rack for holding 17x 8 glass tubes, 25 ml
  81-200-0004
- Glass tubes, 10 ml (100 pcs.)
  91-200-0003
- Glass tubes, 25 ml (100 pcs.)
  91-200-0004

“BASE” Kit
(storage/doses into tubes only)

The “BASE” Offline Kit represents the basic USP/EP compliant ERWEKA offline system where the stainless steel (316) sample withdraw tubes are driven into the media, to the exact USP/EP sampling height, only while the sample is withdrawn – not to change the hydrodynamics constantly.
Similar to the “BUDGET” version also this version allows collecting into glass tubes of 10 ml or 25ml and media replacement is available as an option. The system comprises of:

1.) Fully USP/EP compliant sampling station with automatic sample withdraw height adjustment and 7 stainless steel (316) sample withdraw tubes
2.) 8-channel Peristaltic pump with Verderprene tubing and RS 232 interface for external control
3.) FRL 720 7-channel “silent” Autosampler with x/y driven arm in “corrosion reduced design” for collection of up to 25 sampling intervals into 10 ml glass tubes or 17 sampling intervals into 25 ml glass tubes as well as support arm to hold a rack.
4.) Tubing/Connector Kit, Teflon
5.) System pre-configuration
6.) Upgraded micro-controller for DT 820 series to control the complete Offline System

Not included: DT 820 dissolution tester and collection rack (for glass tubes only).

Operation principle:
The stainless steel (optional Titanium) sample withdraw tubes are driven into the media (exactly midway between the top of the media and the top of the rotating Basket or Paddle) only while the sample is withdrawn – not to change the hydrodynamic inside the vessel – as described in the USP and EP.

Optional the sample withdraw system can be equipped with electronic temperature sensors for each vessel to archive media temperature documentation for each test-station.

The connected pump (8-channel peristaltic pump) transfers the sample to collect from the vessel into glass tubes (10ml or 25 ml maximum capacity) positioned in the rack at the Autosampler.

For more precise dosing – after collection – the x/y driven arm moves down to a selected sample volume level and pumps back the sample above this level to the dissolution vessel (overfilling/levelling principle).

To minimize cross-contamination between of the media of various sampling intervals there’s an automated tube cleaning routine between the sampling intervals.

“BASE” Offline Kit, 7-channel

15-117-0000

- Additional price for 8-channel version
  15-118-xxxx

- Additional price for Titanium sample withdraw tubes, instead of stainless steel
  15-2xx-1xxx

- Additional price for Titanium collection tubes in the Autosampler, instead of st.steel
  15-2xx-x2xx

- Additional price for electronic temperature sensors for media temperature measurement/documentation in each test-station
  15-2xx-xx1x

- Rack for holding 25x 8 glass tubes, 10 ml
  81-200-0003

- Rack for holding 17x 8 glass tubes, 25 ml
  81-200-0004

- Glass tubes, 10 ml (100 pcs.)
  91-200-0003

- Glass tubes, 25 ml (100 pcs.)
  91-200-0004

“PRECISION/lq” Kit
(storage/precision doses into tubes & HPLC vials, media replacement and HPLC vial membrane piercing)

The “PRECISION/lq” Offline Kit represents the standard USP/EP compliant ERWEKA Offline system with high precision dosing (± 0.1 ml), standard media replacement, HLPC Vial membrane piercing and optional dilution function. The system comprises of:

1.) Fully USP/EP compliant sampling station with automatic sample withdraw height adjustment and 7 stainless steel (316) sample withdraw tubes
2.) 7-channel syringe pump SP 725/10 with 10 ml syringes and mechanically operated valves
3.) FRL 720 7-channel “silent” Autosampler with x/y driven arm in “corrosion reduced design” for collection of up to 25 sampling intervals into 10 ml glass tubes, sealed 1.2/4.0 ml HPLC vials or 17 sampling intervals into 25 ml glass tubes as well as support arm to hold a rack.
4.) Tubing/Connector Kit, Teflon
5.) System pre-configuration
6.) Upgraded micro-controller for DT 820 series to control the complete Offline System

Not included: DT 820 dissolution tester and collection rack.

Operation principle:
The stainless steel (optional Titanium) sample withdraw tubes are driven into the media (exactly midway between the top of the media and the top of the rotating Basket or Paddle) only while the sample is withdrawn – not to change the hydrodynamic inside the vessel – as described in the USP and EP.

Optional the sample withdraw system can be equipped with electronic temperature sensors for each vessel to archive media temperature documentation for each test-station.

The connected 7-channel syringe Pump SP 725/10 sucks the media through the filter and Teflon tubing to the syringe, passing a motor driven, mechanical 4-way switching valve with inert interior. Then the valves switch and the new Teflon coated, 2-part pistons push the sample into the waiting glass tubes or sealed/unsealed HPLC vials (membrane piercing standard).

The FRL 720 Autosampler allows storage of up to 25 (glass tubes of 10 ml-, HPLC vials of 1.5 or 4.0 ml capacity) or 17 (glass tubes of 25 ml capacity) sampling intervals.

Optionally cooled racks for HPLC vials are available. After sample collection the 316 stainless steel tubes (optionally Titanium) of the Autosampler drive down into the replacement media inside the acrylic glass reservoir which refills after each media replacement interval automatically by two integrated 1-channel peristaltic pumps. The syringes will transfer the desired volume to the test-stations to keep the media volume within the USP/EP specified ± 1% limits.

The FRL 720 in combination with the syringe pump and 10/25 ml glass tubes allows automated dilution of the sample in the 1:1, 1:2, 1:5 and 1:10 relations.

“PRECISION/lq” Offline Kit, 7-channel
15-127-0000

- Additional price for 8-channel version
  15-128-xxxx
- Additional price for Titanium sample withdraw tubes, instead stainless steel
  15-xxx-1xxx
- Additional price for Titanium collection tubes in the Autosampler, instead st.steel
  15-xxx-x2xx
- Additional price for electronic temperature sensors for media temperature measurement/documentation in each test station
  15-xxx-xx1x
- Rack for holding 25x 8 glass tubes, 10 ml
  81-200-0003
- Glass tubes, 10 ml (100 pcs.)
  91-200-0003
- Rack for holding 17x 8 glass tubes, 25 ml
  81-200-0004
- Glass tubes, 25 ml (100 pcs.)
  91-200-0004
- Rack for holding 25x 8 vials, 1.5 ml
  81-200-0001
- Rack (cooled) for holding 25x 8 vials, 1.5 ml
  81-200-0011
- Rack for holding 25x 8 vials, 4.0 ml
  81-200-0002
- Rack (cooled) for holding 25x 8 vials, 4.0 ml
  81-200-0012
- Dilution option, incl. 3-part container
  81-207-0020

“PRECISION/hq” Kit

(storage/precision doses into tubes & HPLC Vials, media replacement and HPLC Vial membrane piercing)

The “PRECISION/hq” Offline Kit, in contrast to the “PRECISION/lq” Kit, due to the higher capacity 25 ml syringes (dosing precision ± 0.25 ml), allows withdrawing/storing higher volume of sample within a shorter time. E.g. when more than 7 ml media has to be collected the “PRECISION/lq” Kit needs to withdraw media twice while the “PRECISION/hq” Kit can withdraw up to 20 ml at once. The system comprises of:

1.) Fully USP/EP compliant sampling station with automatic sample withdraw height adjustment and 7 stainless steel (316) sample withdraw tubes
2.) 7-channel syringe pump SP 725/25 with 25 ml syringes and mechanically operated valves
3.) FRL 720 7-channel “silent” Autosampler with x/y driven arm in “corrosion reduced design” for collection of up to 25 sampling intervals into 10 ml glass tubes, sealed 1.2/4.0 ml HPLC vials or 17 sampling intervals into 25 ml glass tubes as well as support arm to hold a rack.
4.) Tubing/Connector Kit, Teflon
5.) System pre-configuration
6.) Upgraded micro-controller for DT 820 series to control the complete Offline System

Not included: DT 820 dissolution tester and collection rack.

Operation principle:
The stainless steel (optional Titanium) sample withdraw tubes are driven into the media (exactly midway between the top of the media and the top of the rotating Basket or Paddle)
only while the sample is withdrawn – not to change the hydrodynamic inside the vessel – as described in the USP and EP.

Optional the sample withdraw system can be equipped with electronic temperature sensors for each vessel to archive media temperature documentation for each test-station.

The connected 7-channel syringe Pump SP 725/25 sucks the media through the filter and Teflon tubing to the syringe, passing a motor driven, mechanical 4-way switching valve with inert interior. Then the valves switch and the new Teflon coated, 2-part pistons push the sample into the waiting glass tubes or sealed/unsealed HPLC vials (membrane piercing standard).

The FRL 720 Autosampler allows storage of up to 25 (glass tubes of 10 ml-, HPLC vials of 1.5 or 4.0 ml capacity) or 17 (glass tubes of 25 ml capacity) sampling intervals.

Optionally cooled racks for HPLC vials are available.

After sample collection the 316 stainless steel tubes (optionally Titanium) of the Autosampler drive down into the replacement media inside the acrylic glass reservoir which refills after each media replacement interval automatically by two integrated 1-channel peristaltic pumps. The syringes will transfer the desired volume to the test-stations to keep the media volume within the USP/EP specified ± 1% limits.

The FRL 720 in combination with the syringe pump and 10/25 ml glass tubes allows automated dilution of the sample in the 1:1, 1:2, 1:5 and 1:10 relations.

“PRECISION/hq” Offline Kit, 7-channel
15-147-0000

- Additional price for 8-channel version
  15-138-xxxx
- Additional price for Titanium sample withdraw tubes, instead stainless steel
  15-xxx-1xxx
- Additional price for Titanium collection tubes in the Autosampler, instead st.steel
  15-xxx-x2xx
- Additional price for electronic temperature sensors for media temperature measurement/documentation in each test-station
  15-xxx-xx1x
- Rack for holding 25x 8 glass tubes, 10 ml
  81-200-0003
- Glass tubes, 10 ml (100 pcs.)
  91-200-0003
- Rack for holding 17x 8 glass tubes, 25 ml
  81-200-0004
- Glass tubes, 25 ml (100 pcs.)
  91-200-0004
- Rack for holding 25x 8 vials, 1.5 ml
  81-200-0001
- Rack (cooled) for holding 25x 8 vials, 1.5 ml
  81-200-0011
- Rack for holding 25x 8 vials, 4.0 ml
  81-200-0002
- Rack (cooled) for holding 25x 8 vials, 4.0 ml
  81-200-0012
- Dilution option, incl. 3-part container
  81-207-0020

“FAST” Kit

(storage/doses into tubes & HPLC vials, media replacement and HPLC vial membrane piercing)

The dosing-by-valves “FAST” Kit offers best possible dosing results in combination with the easy-to-use, budget 8-channel peristaltic pump in combination with short sampling intervals (from 2 minutes).

The system allows precision sample dosing into glass tubes (10 ml/25 ml) or sealed/unsealed HPLC vials (1.5 ml/4.0 ml), accurate media replacement as well as HPLC membrane piercing. The system comprises of:

1.) Fully USP/EP compliant sampling station with automatic sample withdraw height adjustment and 7 stainless steel (316) sample withdraw tubes
2.) 8-channel peristaltic pump with Verderprene tubing
3.) FRL 724 7-channel “silent” Autosampler with 7x 3-way-valves and x/y driven arm in “corrosion reduced design” for collection of up to 25 sampling intervals into 10 ml glass tubes, sealed 1.2/4.0 ml HPLC vials or 17 sampling intervals into 25 ml glass tubes as well as support arm to hold a rack.
4.) Tubing/Connector Kit, Teflon
5.) System pre-configuration
6.) Upgraded micro-controller for DT 820 series to control the complete Offline System

Not included: DT 820 dissolution tester and collection rack

Operation principle:
The stainless steel (optional Titanium) sample withdraw tubes are driven into the media (exactly midway between the top of the media and the top of the rotating Basket or Paddle) only while the sample is withdrawn – not to change the hydrodynamic inside the vessel – as described in the USP and EP.

Optional the sample withdraw system can be equipped with electronic temperature sensors for each vessel to archive media temperature documentation for each test-station.

During the sample withdraw tubes are inside the media the peristaltic pump pumps the media in a cycle from the vessel through the Autosampler back to the vessel until all air inside the tubing system is removed and the filters are saturated.

Then the 3-way solenoid valves inside the arm of the FRL 724 Autosampler switch and the required amount of media is collected in either glass tubes (10/25 ml) or sealed/unsealed HPLC vials (1.5/4.0 ml) with an accuracy of ± 0.5 ml.

Optionally cooled racks for HPLC vials are available.

After sample collection the 316 stainless steel tubes (optionally Titanium) of the Autosampler drive to and into the replacement media inside the acrylic glass reservoir which refills after each media replacement interval automatically by two integrated 1-channel peristaltic pumps. The 8-channel peristaltic pump will transfer the desired volume to the test-stations (vessels) to keep the media volume within the USP/EP specified ± 1% limits.

“FAST” Offline Kit, 7-channel

15-157-0000

- Additional price for 8-channel version
  15-148-xxxx
- Additional price for Titanium sample withdraw tubes, instead stainless steel
  15-xxx-1xxx
- Additional price for Titanium collection tubes in the Autosampler, instead st.steel
  15-xxx-x2xx
- Additional price for electronic temperature sensors for media temperature measurement/documentation in each test-station
  15-xxx-xx1x
- Rack for holding 25x 8 glass tubes, 10 ml
  81-200-0003
- Glass tubes, 10 ml (100 pcs.)
  91-200-0003
- Rack for holding 17x 8 glass tubes, 25 ml
  81-200-0004
- Glass tubes, 25 ml (100 pcs.)
  91-200-0004
- Rack for holding 25x 8 vials, 1.5 ml
  81-200-0001
- Rack (cooled) for holding 25x 8 vials, 1.5 ml 81-200-0011
- Rack for holding 25x 8 vials, 4.0 ml
  81-200-0002
- Rack (cooled) for holding 25x 8 vials, 4.0 ml 81-200-0012

“POWER” Kit

(storage/doses into tubes & HPLC vials, media replacement, HPLC vial membrane piercing, filtration from 0.22 µm)

The dosing-by-valves “POWER” Kit represents the high-end ERWEKA Offline Kit which offers features such as membrane filtration from as low as 0.22 µm, precision dosing (better ± 0.5 ml without regular pump-channel calibration/adjustment) and extremely short sampling intervals (from 2 minutes).

The system collects into glass tubes (10 ml/25 ml) or sealed/unsealed HPLC vials (1.5 ml/4.0 ml) and offers accurate media replacement as well as HPLC membrane piercing. The system comprises of:

1.) Fully USP/EP compliant sampling station with automatic sample withdraw height adjustment and 7 stainless steel (316) sample withdraw tubes
2.) 7-channel, valve-free piston pump with Teflon/Ceramic pump-heads
3.) FRL 724 7-channel “silent” Autosampler with 7x 3-way-valves and x/y driven arm in “corrosion reduced design” for collection of up to 25 sampling intervals into 10 ml glass tubes, sealed 1.2/4.0 ml HPLC vials or 17 sampling intervals into 25 ml glass tubes as well as support arm to hold a rack.
4.) Tubing/Connector Kit, Teflon
5.) System pre-configuration
6.) Upgraded micro-controller for DT 820 series to control the complete Offline

Not included: DT 820 dissolution tester and collection rack

Operation principle:
The stainless steel (optional Titanium) sample withdraw tubes are driven into the media (exactly midway between the top of the media and the top of the rotating Basket or Paddle) only while the sample is withdrawn – not to change the hydrodynamic inside the vessel – as described in the USP and EP.

Optional the sample withdraw system can be equipped with electronic temperature sensors for each vessel to archive media temperature documentation for each test-station.

During the sample withdraw tubes are inside the media the piston pump pumps the media in a cycle from the vessel through the membrane filter (optional) through the Autosampler back to the vessel, until all air inside the tubing system is removed and the filters are saturated.

Then the 3-way solenoid valves inside the arm of the FRL 724 Autosampler switch and the required amount of media is collected in either glass tubes (10/25 ml) or sealed/unsealed HPLC vials (1.5/4.0 ml) with an accuracy of better ± 0.5 ml.

The FRL 724 Autosampler allows storage of up to 25 (glass tubes of 10 ml-, HPLC vials of 1.5 or 4.0 ml capacity) or 17 (glass tubes of 25 ml capacity) sampling intervals.

Optionally cooled racks for HPLC vials are available.

After sample collection the 316 stainless steel tubes (optionally Titanium) of the Autosampler drive to and into the replacement media inside the acrylic glass reservoir which refills after each media replacement interval automatically by two integrated 1-channel peristaltic pumps. The piston pump will transfer the desired volume to the test-stations to keep the media volume within the USP/EP specified ± 1% limits.

“POWER” Offline Kit, 7-channel

15-167-0000

- Additional price for 8-channel version
  15-158-xxxx
- Additional price for Titanium sample withdraw tubes, instead stainless steel
  15-xxx-1xxx
- Additional price for Titanium collection tubes in the Autosampler, instead st.steel
  15-xxx-x2xx
- 7/8 channel “Double-Filtration-System” to insert membrane filters from 0.22 µm (prefiltration required) 81-207-0800
- Additional price for electronic temperature sensors for media temperature measurement/documentation in each test-station
  15-xxx-xx1x
- Rack for holding 25x 8 glass tubes, 10 ml
  81-200-0003
- Glass tubes, 10 ml (100 pcs.)
  91-200-0003
- Rack for holding 17x 8 glass tubes, 25 ml
  81-200-0004
- Glass tubes, 25 ml (100 pcs.)
  91-200-0004
- Rack for holding 25x 8 vials, 1.5 ml
  81-200-0001
- Rack (cooled) for holding 25x 8 vials, 1.5 ml
  81-200-0011
- Rack for holding 25x 8 vials, 4.0 ml
  81-200-0002
- Rack (cooled) for holding 25x 8 vials, 4.0 ml
  81-200-0012

“BASE-14” Kit
(storage/doses into tubes only)

The “BASE-14” Offline Kit represents the basic USP/EP compliant ERWEKA offline system for 14 test-stations where the stainless steel (316) sample withdraw tubes are driven into the media, to the exact USP/EP sampling height, only while the sample is withdrawn – not to change the hydrodynamics constantly.
The “BASE-14” version allows collecting into glass tubes of 10 ml or 25ml.

The system comprises of:

1.) Fully USP/EP compliant sampling station with automatic sample withdraw height adjustment and 14 stainless steel (316) sample withdraw tubes
2.) 16-channel peristaltic pump with verderprene tubing
3.) FRL 720-2 14-channel “silent” Autosampler with x/y driven arm in “corrosion reduced design” for collection of up to 12 sampling intervals into 10 ml glass tubes or 8 sampling intervals into 25 ml glass tubes as well as support arm to hold a rack.
4.) Tubing/Connector Kit, Teflon
5.) System pre-configuration
6.) Upgraded DT 1420i series to control the complete Offline System, incl. alphanumeric keypad, graphic LC display and product memory

Not included: DT 1420 dissolution tester and collection rack (for glass tubes only)

<u>Operation principle:</u>
The stainless steel (optional Titanium) sample withdraw tubes are driven into the media (exactly midway between the top of the media and the top of the rotating Basket or Paddle) only while the sample is withdrawn – not to change the hydrodynamic inside the vessel – as described in the USP and EP.

Optional the sample withdraw system can be equipped with electronic temperature sensors for each vessel to archive media temperature documentation for each test-station.

The connected pump (16-channel peristaltic pump) transfers the sample to collect from the vessel into glass tubes (10ml or 25 ml maximum capacity) positioned in the rack at the Autosampler.

For more precise dosing – after collection – the x/y driven arm moves down to a selected sample volume level and pumps back the sample above this level to the dissolution vessel (overfilling/levelling principle).

To minimize cross-contamination between of the media of various sampling intervals there’s an automated tube cleaning routine between the sampling intervals.

“BASE-14” Offline Kit, 14-channel
16-128-0000

- Additional price for Titanium sample withdraw tubes, instead stainless steel
  15-xxx-1xxx

- Additional price for Titanium collection tubes in the Autosampler, instead st.steel
  15-xxx-x2xx

- Additional price for electronic temperature sensors for media temperature measurement/documentation in each test-station
  15-xxx-xx1x

- Rack for holding 25x 8 glass tubes, 10 ml
  81-200-0003

- Glass tubes, 10 ml (100 pcs.)
  91-200-0003

- Rack for holding 17x 8 glass tubes, 25 ml
  81-200-0004

- Glass tubes, 25 ml (100 pcs.)
  91-200-0004

“FAST-14” Kit

(storage/doses into tubes & HPLC vials, media replacement and HPLC vial membrane piercing)

The dosing-by-valves “FAST-14” Kit offers best possible dosing results in combination with the easy-to-use, budget 16-channel peristaltic pump in combination with short sampling intervals (from 2 minutes).

The system allows precision sample dosing into glass tubes (10 ml / 25 ml) or sealed/unsealed HPLC vials (1.5 ml/4.0 ml), accurate media replacement as well as HPLC membrane piercing. The system comprises of:

1.) Fully USP/EP compliant sampling station with automatic sample withdraw height adjustment and 14 stainless steel (316) sample withdraw tubes
2.) 16-channel peristaltic pump with Verderprene tubing
3.) FRL 724-2 14-channel “silent” Autosampler with 14x 3-way-valves and x/y driven arm in “corrosion reduced design” for collection of up to 12 sampling intervals into 10 ml glass tubes, sealed 1.2/4.0 ml HPLC vials or 8 sampling intervals into 25 ml glass tubes as well as support arm to hold a rack.
4.) Tubing/Connector Kit, Teflon
5.) System pre-configuration
6.) Upgraded DT 1420i series to control the complete Offline System, incl. alpha-numeric keypad, graphic LC display and product memory

Not included: DT 1420 dissolution tester and collection rack

Operation principle:
The stainless steel (optional Titanium) sample withdraw tubes are driven into the media (exactly midway between the top of the media and the top of the rotating Basket or Paddle)
only while the sample is withdrawn – not to change the hydrodynamic inside the vessel – as described in the USP and EP.

Optional the sample withdraw system can be equipped with electronic temperature sensors for each vessel to archive media temperature documentation for each test-station.

During the sample withdraw tubes are inside the media the peristaltic pump pumps the media in a cycle from the vessel through the Autosampler back to the vessel, until all air inside the tubing system is removed and the filters are saturated.

Then 3-way solenoid valves inside the arm of the FRL 724-2 Autosampler switch and the required amount of media is collected in either glass tubes (10/25 ml) or sealed/unsealed HPLC vials (1.5/4.0 ml) with an accuracy of ± 0.5 ml.

Optionally cooled racks for HPLC vials are available.

After sample collection the 316 stainless steel tubes (optionally Titanium) of the Autosampler drive to and into the replacement media inside the acrylic glass reservoir which refills after each media replacement interval automatically by two integrated 1-channel peristaltic pumps. The syringes will transfer the desired volume to the test-stations to keep the media volume within the USP/EP specified ± 1% limits.

“FAST-14” Offline Kit, 14-channel 16-148-0000

- Additional price for Titanium sample withdraw tubes, instead stainless steel
  15-xxx-1xxx
- Additional price for Titanium collection tubes in the Autosampler, instead st.steel
  15-xxx-x2xx
- Rack for holding 25x 8 glass tubes, 10 ml
  81-200-0003
- Glass tubes, 10 ml (100 pcs.)
  91-200-0003
- Rack for holding 17x 8 glass tubes, 25 ml
  81-200-0004
- Glass tubes, 25 ml (100 pcs.)
  91-200-0004
- Rack for holding 25x 8 vials, 1.5 ml
  81-200-0001
- Rack (cooled) for holding 25x 8 vials, 1.5 ml
  81-200-0011
- Rack for holding 25x 8 vials, 4.0 ml
  81-200-0002
- Rack (cooled) for holding 25x 8 vials, 4.0 ml
  81-200-0012

“POWER-14” Kit

(storage/doses into tubes & HPLC vials, media replacement, HPLC vial membrane piercing, filtration from 0.22 µm)

The dosing-by-valves “POWER-14” Kit represents the high-end ERWEKA Offline Kit which offers features such as membrane filtration from as low as 0.22 µm, precision dosing (better ± 0.5 ml without regular pump-channel calibration/adjustment) and extremely short sampling intervals (from 2 minutes).

The system collects into glass tubes (10 ml/25 ml) or sealed/unsealed HPLC vials (1.5 ml/4.0 ml) and offers accurate media replacement as well as HPLC membrane piercing. The system comprises of:

1.) Fully USP/EP compliant sampling station with automatic sample withdraw height adjustment and 14 stainless steel (316) sample withdraw tubes
2.) 2x 7-channel, valve-free piston pump with Teflon/Ceramic pump-heads
3.) FRL 724-2 14-channel “silent” Autosampler with 14x 3-way-valves and x/y driven arm in “corrosion reduced design” for collection of up to 12 sampling intervals into 10 ml glass tubes, sealed 1.2/4.0 ml HPLC vials or 8 sampling intervals into 25 ml glass tubes as well as support arm to hold a rack.
4.) Tubing/Connector Kit, Teflon
5.) System pre-configuration
6.) Upgraded DT 1420i series to control the complete Offline System, incl. alpha-numeric keypad, graphic LC display and product memory

Not included: DT 1420 dissolution tester and collection rack.

Operation principle:
The stainless steel (optional Titanium) sample withdraw tubes are driven into the media (exactly midway between the top of the media and the top of the rotating Basket or Paddle) only while the sample is withdrawn – not to change the hydrodynamic inside the vessel as described in the USP and EP.

Optional the sample withdraw system can be equipped with electronic temperature sensors for each vessel to archive media temperature documentation for each test-station.

During the sample withdraw tubes are inside the media the piston pump pumps the media in a cycle from the vessel through the Autosampler back to the vessel, until all air inside the tubing system is removed.

Then 3-way solenoid valves inside the arm of the FRL 724-2 Autosampler switch and the required amount of media is collected in either glass tubes (10/25 ml) or sealed/unsealed HPLC vials (1.5/4.0 ml) with an accuracy of better ± 0.5 ml.

Optionally cooled racks for HPLC vials are available.

After sample collection the 316 stainless steel tubes (optionally Titanium) of the Autosampler drive to and into the replacement media inside the acrylic glass reservoir which refills after each media replacement interval automatically by two integrated 1-channel peristaltic pumps. The piston pump will transfer the desired volume to the test-stations to keep the media volume within the USP/EP specified ± 1% limits.

“POWER-14” Offline Kit, 14-channel
16-158-0000

- Additional price for Titanium sample withdraw tubes, instead stainless steel
  15-xxx-1xxx

- Additional price for Titanium collection tubes in the Autosampler, instead st.steel
  15-xxx-x2xx

- 14 channel “Double-Filtration-System” to insert membrane filters from 0.22 µm (pre-filtration required) 81-207-1400

- Additional price for electronic temperature sensors for media temperature measurement/documentation in each test-station
  15-xxx-xx1x

- Rack for holding 25x 8 glass tubes, 10 ml
  81-200-0003

- Glass tubes, 10 ml (100 pcs.)
  91-200-0003

- Rack for holding 17x 8 glass tubes, 25 ml
  81-200-0004

- Glass tubes, 25 ml (100 pcs.)
  91-200-0004

- Rack for holding 25x 8 vials, 1.5 ml
  81-200-0001

- Rack (cooled) for holding 25x 8 vials, 1.5 ml
  81-200-0011

- Rack for holding 25x 8 vials, 4.0 ml
  81-200-0002

- Rack (cooled) for holding 25x 8 vials, 4.0 ml
  81-200-0012

“DUAL” Kit

(storage/precision doses into tubes & HPLC Vials, media replacement and HPLC Vial membrane piercing- from 2 Dissolution baths)

The “DUAL” Offline Kit is designed to collect samples from 2 independent operation dissolution testers which are running with the same product/media but e.g. with different batches.
The samples from both baths are withdrawn by only one SP 725/25 syringe pump and collected into just one Autosampler.
Therefore the maximum capacity is 12 sampling intervals. In case of sampling intervals equal/greater 15 min. (incl. media replacement) both baths run simultaneously, in case of shorter sampling intervals one after the other. Minimum sampling interval of 15 minutes. The system comprises of:

1.) 2x fully USP/EP compliant sampling station with automatic sample withdraw height adjustment and 7 stainless steel (316) sample withdraw tubes each
2.) 2x autom. tablet insert system
3.) 7-channel syringe pump SP 725/25 with 25 ml syringes and mechanically operated valves
4.) FRL 720 7-channel “silent” Autosampler with x/y driven arm in “corrosion reduced design” for collection of up to 12 sampling intervals/bath into 10 ml glass tubes, sealed 1.2/4.0 ml HPLC vials or 8 sampling intervals/bath into 25 ml glass tubes as well as support arm to hold a rack.
5.) 2x Tubing/Connector Kit, Teflon
6.) System pre-configuration
7.) 2x upgraded micro-controller for DT 820 series to control the complete Offline System

Not included: 2x DT 820 dissolution tester and collection rack (for glass tubes only).

Operation principle:
After entering all test information the time management will calculate if the tests in both baths can be operated at the same time or only after each other. The time management will calculate when to drop the tablets best and the automatically start each test-run at the optimum time point, drop the tablets, start the stirring action etc.

For sampling the stainless steel (optional Titanium) sample withdraw tubes are driven into the media (exactly midway between the top of the media and the top of the rotating Basket or Paddle) only while the sample is withdrawn – not to change the hydrodynamic inside the vessel – as described in the USP and EP.

Optional the sample withdraw systems can be equipped with electronic temperature sensors for each vessel to archive media temperature documentation for each test-station.

The connected 7-channel syringe Pump SP 725/25 sucks the media through the filter and Teflon tubing inside the syringe, passing a motor driven, mechanical 4-way switching valve with inert interior. Then the valves switch and the new Teflon coated, 2-part pistons push the sample into the waiting glass tubes or sealed/unsealed HPLC vials (membrane piercing standard).

Optionally cooled racks for HPLC vials are available.

After sample collection the 316 stainless steel tubes (optionally Titanium) of the Autosampler drive down into the replacement media inside the acrylic glass reservoir which refills after each media replacement interval automatically by two integrated 1-channel peristaltic pumps. The syringes will transfer the desired volume to the test-stations to keep the media volume within the USP/EP specified ± 1% limits – but also to clean the complete tubing/valve/syringe system for the next sample
withdraw process at the other bath, to minimize the cross-contamination between the 2 dissolution testers.

“DUAL” Offline Kit, 2x 7-channel
15-177-0000

- Additional price for 2x 8-channel version
  15-168-xxxx
- Additional price for Titanium sample withdraw tubes, instead stainless steel
  15-xxx-1xxx
- Additional price for Titanium collection tubes in the Autosampler, instead st.steel
  15-xxx-x2xx
- Additional price for electronic temperature sensors for media temperature measurement/documentation in each test-station
  15-xxx-xx1x
- Rack for holding 25x 8 glass tubes, 10 ml
  81-200-0003
- Rack for holding 17x 8 glass tubes, 25 ml
  81-200-0004
- Glass tubes, 10 ml (100 pcs.)
  91-200-0003
- Glass tubes, 25 ml (100 pcs.)
  91-200-0004
- Rack for holding 25x 8 vials, 1.5 ml
  81-200-0001
- Rack (cooled) for holding 25x 8 vials, 1.5 ml
  81-200-0011
- Rack for holding 25x 8 vials, 4.0 ml
  81-200-0002
- Rack (cooled) for holding 25x 8 vials, 4.0 ml
  81-200-0012
- Dilution option, incl. 3-part container
  81-207-0020

ERWEKA UV-VIS In- or Online System
(analysis only)

1. Sample Transfer Pump

1.1. Sample Transfer Pump IPC 8
(Peristaltic Pump)

With the standard ERWEKA 8-channel Peristaltic Pump (IPC 8) the sample is taken from the test vessel and injected to the flow-through cells of the spectrophotometer. After analysis the sample is transferred back to the test vessel.

Pump tubing's are made of Verderprene (similar to Teflon) to prevent the absorption previously associated with peristaltic pumps and PVC tubing.

Via the serial RS 232 interface the pump is controlled from the external PC.

- ✓ 8-channel Peristaltic Pump
- ✓ RS 232 serial interface for external control
- ✓ Touch sensitive keys and LC display
- ✓ Verderprene tubing for elimination of absorption of active ingredients by PVC tubing

1.2. Agilent Sample Transfer Pump

When ordering the Online Dissolution Package with Agilent 8453 Diode Array, the Systems comes with Agilent 8-channel Peristaltic Pump. System Control via Agilent Software instead of ERWEKA Disso.net (see 3.2).

2. UV-VIS Spectrophotometers

Shimadzu 1800
Double beam including 8 position cell changer, ready for Online Systems

230V/50 Hz	72-206-2031
230V/60Hz	72-206-2032
115V/60Hz	72-206-2033
127V/60Hz	72-206-2034

Analytic Jena Specord 205
double beam including 8 position cell changer, ready for Online Systems

230V/50Hz	72-204-0001
230V/60Hz	72-204-0002
115V/60Hz	72-204-0003
127V/60Hz	72-204-0004

ERWEKA SPM
Double beam including 8 position cell changer, ready for Online Systems including tubing.

230V/50Hz	72-203-0001
230V/60Hz	72-203-0002
115V/60Hz	72-203-0003
127V/60Hz	72-203-0004

Perkin Elmer Lambda 25
Double beam including 8 position cell changer, ready for Online System including tubing and Perkin Elmer WinLab 2 Software Package

230V/50Hz	72-203-2001
230V/60Hz	72-203-2002
115V/60Hz	72-203-2003
127V/60Hz	72-203-2004

Perkin Elmer Lambda 35
Double beam including 8 position cell changer, ready for Online System including tubing and WinLab 5 Perkin Elmer Software Package.

230V/50Hz	72-203-2011
230V/60Hz	72-203-2012
115V/60Hz	72-203-2013
127V/60Hz	72-203-2014

Agilent 8453, including 8 position cell changer, ready for Online Systems including tubing

230V/50Hz	72-203-5001
230V/60Hz	72-203-5002
115V/60Hz	72-203-5003
127V/60Hz	72-203-5004

3. System Control

3.1. Disso.net Software

Windows based ERWEKA Disso.net software Disso.net. Windows based CFR 21/11 compliant ERWEKA Dissolution System Software Disso.net

Recommended PC configuration:
- Processor: Pentium IV 1.2 GHz
- Memory: 256 MB, HDD free space: 300 MB
- Operating system: MS Windows 7 or MS Windows XP Professional
- Screen resolution: 1024x768 (minimal), 1280x1024 (recommended)

3.2. Driver for Agilent 8453

Agilent Chem Station and Agilent Dissolution Software package as well as ERWEKA driver to connect and control Dissolution Testers of the ERWEKA DT 700/800 Series.

4. System Tubing

System Tubing, complete with tubing and connectors, Teflon 3.0 mm o.d., configured as Inline-System (return to vessel after analysis).

5. System Pre-Configuration

Control and Pre-Configuration of the complete system at the ERWEKA laboratory. Control of function and numbering of all tubes and interface cables for easy connection at the customers site.

6. Computer

Brand name computer in minitower housing
- CPU Intel Pentium 4 min. 2.8 GHz
- Hard disk min. 40 GB
- Main memory min. 512 MB
- 3x serial interface
- 6 USB 2.0 interfaces
- 16xDVD-ROM device

Operating system Windows XP, keyboard, scroll mouse, 17“ flat-screen TFT monitor.

Customer specified computer, printer and monitor available on special request!!!

Prices include:

1. ***ERWEKA Peristaltic Pump IPC 8 or Agilent Peristaltic Pump***
2. ***UV-VIS Spectrophotometer incl. Cell-Changer,***
3. ***ERWEKA Windows based 21 CFR 11 com- pliant Software, Type Disso.net, with Interface Boxes for control of UV-VIS of ERWEKA, Perkin Elmer, Shimadzu, Analytic Jena and Agilent***
   or
   Agilent Chem Station and Driver for ERWEKA Dissolution Bath
4. ***Computer, TFT monitor, colour printer***
5. ***Teflon Tubing/Connector Kit and Pre-Configuration***

!!! Excluding IQ document/s, Dissolution Tester, Sample Withdraw System and Cuvettes !!!

Options

1. Sample Transfer Pump, PVP 720/820

7-channel (optional 8-channel) high pressure, valve free Teflon/Ceramics Piston Pump for all Dissolutions Systems which require membrane filtration below 1 µm (dependant on the product this pump allows filtration down to 0.22µm)

High dosage accuracy (± 0.5 ml) and fast operation (sampling intervals from 2 minutes) in combination with FRL 724/824 Fraction Collectors.

PVP 720, 7-channel piston pump 11-312-1201

PVP 820, 8-channel piston pump 11-312-1211

2. Cuvettes for UV-VIS

With Teflon tubing (0.8 mm o.d.) and screw-fittings. For 8-position cell changers

- 1x Path Length 10 mm 80-203-0010
- 1x Path Length 5 mm 80-203-0005
- 1x Path Length 2 mm 80-203-0002
- 1x Path Length 1 mm 80-203-0001

3. Cuvettes for UV-VIS (other than standard)

- 8 off Path Length 10 mm 80-203-2110
- 8 off Path Length 5 mm 80-203-2105
- 8 off Path Length 2 mm 80-203-2102
- 8 off Path Length 1 mm 80-203-2101

2. IQ/OQ/PVT documents for UV-VIS

- Perkin Elmer 75-203-2999
- Shimadzu 75-203-3999
- Cecil 75-203-4999
- Agilent 75-203-5999

5. Tubing (other than 3.0 mm; only with IPC 8)

Additional price for other tubing than standard (Teflon 3.0 mm o.d.).

- Verderprene 60-203-0002
- PEEK 60-203-0003

ERWEKA UV-VIS Dual Online Systems

(analysis for 2 independent Dissolution Testers)

1. 2 off Sample Transfer Pump, IPC 8 (Peristaltic Pump)

With the standard ERWEKA 8-channel Peristaltic Pump (IPC 8) the sample is taken from the test vessel and injected to the flow-through cells of the spectralphotometer. After analysis the sample is transferred back to the test vessel.

Pump tubing's are made of Verderprene (similar to Teflon) to prevent the absorption previously associated with peristaltic pumps and PVC tubing.
Via the serial RS 232 interface the pump is controlled from the external PC.

- ✓ 8-channel Peristaltic Pump
- ✓ RS 232 serial interface for external control
- ✓ Touch sensitive keys and LC display
- ✓ Verderprene tubing for elimination of absorption of active ingredients by PVC tubing

2. UV-VIS Spectrophotometers

ERWEKA SPM
double beam including 16 position cell changer and tubing, ready for Online Systems.

3. System Control

ERWEKA Dissolution Software type Disso.net
The ERWEKA Disso.net Software is able to run under Windows XP and Windows 7. For Dual Online System (Dissolution Testers, Sample Transfer Pumps and UV-VIS Photometer Perkin Elmer).

4. System Tubing

System Tubing, complete with tubing and connectors, Teflon 3.0 mm o.d.

5. System Pre-Configuration

Control and pre-configuration of the complete system at the ERWEKA laboratory. Control of function and numbering of all tubes and interface cables for easy connection at the customers site.

6. Computer

Brand name computer in minitower housing
- CPU Intel Pentium 4 min. 2.8 GHz
- Hard disk min. 40 GB
- Main memory min. 512 MB
- 1 serial interface
- 6 USB 2.0 interfaces
- 16x DVD-ROM device

Operating system Windows XP, keyboard, scroll mouse, 17“ flat-screen TFT monitor.

Customer specified computer, printer and monitor available on special request!!!

Prices includes:
1. ***2 off Peristaltic Pump, IPC 8***
2. ***UV-VIS Spectrophotometer incl. Cell-Changer and 16x 10 mm Cuvettes***
3. ***ERWEKA Windows based Disso.net with intelligent Interface Box***
4. ***Computer, monitor and printer***
5. ***Teflon Tubing/Connector Kit and Pre-Configuration***

!!! Excluding IQ document/s and Dissolution Testers with Sample Withdraw System !!!

230V/50Hz	76-205-2011
230V/60Hz	76-205-2012
115V/60Hz	76-205-2013
127V/60Hz	76-205-2014

Options

1. Cuvettes for UV-VIS (other than standard)

8 off Path Length 10 mm	80-203-2110
8 off Path Length 5 mm	80-203-2105
8 off Path Length 2 mm	80-203-2102
8 off Path Length 1 mm	80-203-2101

2. IQ/OQ/PVT Documents for UV-VIS

IQ/OQ/PVT document for Dual Online System	75-205-x999

3. Tubing (other than standard)

Tubing, Verderprene	60-205-0002
PEEK	60-205-0003

4. Sample Transfer Pump

ERWEKA Dual Online Dissolution System can also be operated with two high-precision, high power, absorption-free ERWEKA Piston Pumps (PVP 720/820) instead of the 2 standard Peristaltic Pumps. Additional price

2x PVP 720	11-312-1201
2x PVP 820	11-312-1211

ERWEKA UV-VIS Off-/Online System

(storage, media replacement, dilution and UV-VIS analysis)

1. Sample Transfer Pump, SP 825/25 (Syringe Pump)

The ERWEKA 8-channel Syringe Pump, Type SP 825/25 with 25 ml Syringes is the ideal Media Transfer Pump for all kind of Dissolution Systems. It offers very accurate volume flow, elimination of absorption (glass/Teflon) and high flexibility due to an electric 4-way valve at the in-/outlet of each syringe. This unique design allows performing all needed steps for the Dissolution Test, even dilution, media replacement and transfer from the Fraction Collector to an UV-VIS system with only one pump! The SP 825/25 is equipped with a RS 232 interface for control by the ERWEKA Disso.net software.

- ✓ 8-channel Syringe Pump
- ✓ 8 electric 4-way valves, absorption free
- ✓ Hamilton syringes 25 ml
- ✓ Accuracy of volume ± 0,2 ml (25 ml syringes)
- ✓ RS 232 serial interface
- ✓ Teflon tubing

2. Autosampler, FRL 820

The FRL 820 was designed to meet all users' requirements such as storage of the samples, dilution of the stored samples and when connected to a UV-VIS Spectrophotometer, transfer of the diluted or undiluted sample with the need of only one ERWEKA 8-channel Syringe Pump, Type SP 825/25.

In combination with an ERWEKA Dissolution Tester, the ERWEKA Dissolution Software package and the before mentioned Syringe Pump, the system offers storage in either glass tubes (25x 8 of 10 or 17x 8 of 25 ml volume) or sealed/ unsealed HPLC vials (25x 8 of 1.5 or 4.0 ml volume).

Due to the 8-channel ERWEKA Syringe Pump, the samples are dosed with a high accuracy of volume.

When the sample is taken, the withdrawn media volume may be replaced with fresh media from a media replacement container, integrated in the FRL 820. Two 1-channel Peristaltic Pumps refills the media replacement container automatically after the media replacement process.

The stored sample may be diluted with dilution media in a ratio of max. 1:10 from an integrated dilution media container (to be automatically refilled from an external media

container by a Peristaltic Pump integrated in the FRL 820).
In combination with the ERWEKA Windows based Disso.net software and an UV-VIS Spectrophotometer with Cell-Changer, the withdrawn sample can be either transferred directly from the Dissolution Tester to the UV-VIS, be stored in the tubes of the FRL 820 and later analysed or stored in tubes, automatically diluted and transferred to the UV-VIS for analyses **using only one pump!**

- ✓ Precision dosing by the ERWEKA 8-channel Syringe Pump, SP 825/25
- ✓ Stores up to 8 samples for up to 25 sampling cycles
- ✓ Samples into tubes (10 or 25 ml)
- ✓ Samples into sealed or unsealed HPLC Vials (1.5 or 4.0 ml max. volume)
- ✓ Standard HPLC Vial membrane piercing
- ✓ Media replacement to stay within the USP/EP specified media volume tolerance
- ✓ Integrated container for replacement media, incl. two 1-channel Peristaltic Pumps to refill the integrated container from an external one after each replacement process
- ✓ Automated dilution system (ratio up to 1:10); accuracy to 2 ml
- ✓ Integrated container for dilution media, incl. 1-channel Peristaltic Pump to refill the integrated container from an external one after each dilution process
- ✓ Automated transfer of the diluted/undiluted sample to an UV-VIS Spectrophotometer with Cell-Changer, using the ERWEKA Windows based Disso.net software

3. UV-VIS Spectrophotometers

ERWEKA SPM double beam including position cell changer. Ready for Online Systems including tubing and Microsoft Windows-based software Disso.net by ERWEKA.

230V/50Hz	71-203-2111
230V/60Hz	71-203-2112
115V/60Hz	71-203-2113
127V/60Hz	71-203-2114

4. System Control

Disso.net
The ERWEKA Disso.net software is able to run under Windows NT and Windows XP.
For Off-/Online System (Dissolution Tester, Sample Transfer Pump, Fraction Collector and UV-VIS Photometer Perkin Elmer and Shimadzu, ERWEKA, Analytic Jena and Agilent.

5. System Tubing

System tubing, complete with tubing and connectors, Teflon 3.0 mm o.d.

6. System Pre-Configuration

Control and pre-configuration of the complete system at the ERWEKA laboratory. Control of function and numbering of all tubes and interface cables for easy connection at the customers site.

7. Computer

Brand name computer in minitower housing
- CPU Intel Pentium 4 min. 2.8 GHz
- Hard disk min. 40 GB
- Main memory min. 512 MB
- 1 serial interface
- 6 USB 2.0 interfaces
- 16x DVD-ROM device

Operating system Windows XP, keyboard, scroll mouse, 17“ flat-screen TFT monitor.
*Customer specified computer, printer and monitor available on special request!!!**Prices include:***

1. ***ERWEKA Syringe Pump SP 825/25***
2. ***Autosampler FRL 820***
3. ***UV-VIS Spectrophotometer incl. Cell-Changer***
4. ***ERWEKA Windows based Disso.net software with intelligent Interface Box***
5. ***Computer, monitor and printer***
6. ***Teflon Tubing/Connector Kit and Pre-Configuration***

!!! Excluding Racks, IQ/OQ/PVT document/s and Dissolution Tester with Automatic Sampling Station !!!

230V/50Hz	76-206-2001
230V/60Hz	76-206-2002
115V/60Hz	76-206-2003
127V/60Hz	76-206-2004

Options

1.1 Valve-Box in the return channel

- A valve box with 8x 3-way valves allows analysing either samples withdrawn directly from the Dissolution vessel and automatically diluted samples which are transferred from the Fraction Collector to the connected UV-VIS.
  Media coming directly from the vessel after analysis is transferred back to the vessel; diluted samples coming from Fraction Collector are directed to waste.

230V/50Hz	80-206-0001
230V/60Hz	80-206-0002
115V/60Hz	80-206-0003
127V/60Hz	80-206-0004

1.2 Racks for Autosampler

- Rack for 25x 8, for HPLC vials of 1.5 ml volume 80-300-0001
- Rack for 25x 8, for HPLC vials of 4.0 ml volume 80-300-0002
- Rack for 25x 8, with glass tubes of 10 ml volume 80-300-0003
- Rack for 17x 8, with glass tubes of 25 ml volume 80-300-0004

1.3. Probes for Autosampler (FRL x20)

- Titanium probes instead of st. steel probes 70-20x-x1xx

2. Cuvettes for UV-VIS

With Teflon tubing (0.8 mm o.d.) and screw-fittings
- 1x Path Length 10 mm 80-203-0010
- 1x Path Length 5 mm 80-203-0005
- 1x Path Length 2 mm 80-203-0002
- 1x Path Length 1 mm 80-203-0001

3. Cuvettes for UV-VIS (other than standard)

- 8 off Path Length 10 mm 80-203-2110
- 8 off Path Length 5 mm 80-203-2105
- 8 off Path Length 2 mm 80-203-2102
- 8 off Path Length 1 mm 80-203-2101

4. IQ/OQ/PVT Documents for UV-VIS

- Perkin Elmer 75-203-2999
- Shimadzu 75-203-3999
- Cecil 75-203-4999

ERWEKA Half-Automated UV-VIS- and HPLC-Online Dissolution System “HADs”

The highest degree of automation and flexibility is offered by the new half-automated Dissolution System. The HADs bases on the full validated software of the ERWEKA RoboDis and therefore is prepared for UV-VIS-, HPLC analysis, fraction collection as well a combination of all. That’s the breakthrough for method development as well as for highest flexibility.

The HADs uses an innovative flow-through system of sealed PEEK-vials. The sample is withdrawn from the dissolution vessel through tip filters from 1 µm porosity by a peristaltic pump (in case of filtration from 0.22 µm porosity instead the membrane filter changer AFC 825 (see page 39) or double filtration station in combination with the piston pump PVP 820 can be used) to the PEEK block of sealed flow-through vials integrated in the auto sampler.

Operation
A x/y/z driven arm with an embedded syringe picks up the samples from the flow-through vials and store them into HPLC vials (max. 324 sealed vials; optionally electronically tempered from 4° to 70°). A time managing program optimizes and calculates when a sample can be transferred from the HPLC-Vials to the Rheodyne valve for HPLC analysis. A direct online injection without buffering the samples is also possible.
The auto sampler offers such features as multiple standard racks for HPLC device calibration, needle wash station, replacement of the withdrawn sample volume by fresh media.

HPLC Online connection
Connection to equipment of all manufacturers for e. g. Shimadzu, Agilent and Waters as well as the possibility of a connection to different chromatograph systems like Empower (Waters) or Cerity (Agilent).

UV-VIS Online Connection
In addition to the HPLC connection the ERWEKA HADs offers the possibility to include a UV-VIS Spectrophotometer (ERWEKA, Perkin Elmer, Shimadzu, Analytic Jena, Agilent) into the close-loop sample withdraw system, so i.e. between the sample transfer pump and the PEEK flow-through vial block or the PEEK flow-through vial block and the return to the dissolution tester.
Therefore the ERWEKA HADs can be used as sample collection device (max. 324 samples; incl. sample tempering), a HPLC Online System in combination with virtually any brand of HPLC device and an Online UV-VIS system (incl. virtual dilution by various path length with optimized flow-through cuvettes).

Capacity
The ERWEKA HADs allows two Dissolution Tester via two individual sample transfer pumps to one auto sampler with two embedded PEEK flow-through vial blocks (no cross contamination). Either none, one or both of the Dissolution testers, in addition to the HPLC Online system, can be fitted with a UV-VIS Spectrophotometer inside the closed-loop sampling system.

Software
Based on the ERWEKA® standard Disso.net software, the system enables the im-/export to other IT-systems for e. g. LIMS or chromatography data systems. Also the automatic recording of sampling times, temperature and rotation speed in each vessel brings facilitation. Every deviation is documented automatically.

Video monitoring
An automated system runs without user observation. What to do when the results of the dissolution test aren’t as expected, too low or too high? Nobody had been there during the test, nobody knows if this has been caused by the

sample itself or by system errors such as coming, sticking etc. So what to do with the incorrect results? To through them and hide them from the authorities? To eliminate that problem completely the ERWEKA HADs is available with video monitoring of six dissolution vessels of one or both connected dissolution testers. The video monitoring allows recording of each test-run in combination with real-time overlapping dissolution profile to identify disturbances such as coning etc. and to get the visual impression of 24 hours in 2 minutes. The video monitoring is a very powerful tool for method development as well for troubleshooting.

230V/50Hz	72-210-0001
230V/60Hz	72-210-0002
115V/60Hz	72-210-0003
127V/60Hz	71-210-0004

1. Dissolution Tester/s

up to two Dissolution Testers can be connected to one HADs

- **Dissolution Tester, Type DT 726/LH-1000** The 8 position - 6 test-stations DT 726 is the ideal NG Dissolution Tester for software controlled Dissolution System. While controls are performed via the PC the unit itself shows its run conditions at individual bright LE displays. The DT 720 series includes such features as MagniShaft "tool-free" stirrer exchange system, fully corrosion-free construction (alloy; fibreglass etc.), one-piece mould water bath with powerful external flow-through heater, fast moving column for the drive heat etc. "Low-Head" configuration ("High-Head" on special request).(for Dual system 2x DT 726/LH-1000 have to be selected) 14-070-6001

- **Automated Sample Withdraw System** Driven bar with attached sampling- and replacement tubes (st.steel) for sample-withdraw and -replacement. Microprocessor controlled to withdraw at the USP/EP specified sampling height (midway) for each combination of media volume and stirrer type. 14-x7x-x4xx

- **Automated Sample Withdraw System** Same as above - but with 8 additional electronic temperature sensors for display and documentation of the media temperature in each Vessel. 14-x7x-x9xx

- **Titanium Sampling- and Replacement tubes** (instead of st.steel), corrosion-free 80-090-0200

- **Cleaning Reservoir** for sampling station; with 3 compartments to avoid any cross-contamination. 80-089-0000

- **Electronic (waterless) calibration System** for calibration of PT 100 temperature sensors, recommended with 10-092-0001

2. Options

- 7 test-stations (instead 6); Position 7 with drive shaft; Additional price 14-x7x-7xxx

- External electronic temperature sensor PT 100 for display of water bath - or media temperature. Extended instrument menu for one-point calibration routine as well as calibration hard-copy documentation. 84-070-0100

- Automated Tablet Drop Magazine (instead manual operation of standard tablet drop magazine). With temperature check before drop. 84-070-0010

- Illumination of the water bath by integrated LEDs 84-090-0112

- Vessel Centering Ring for centering and holding ERWEKA Vessel 84-060-3000

- USP compliant Vessel, Polycarbonate 80-000-1001

- USP compliant Vessel, glass, standard 80-000-1002

- USP compliant Vessel, glass, numbered with certificate of compliance 85-000-1002

- USP compliant Vessel, UV resistant brown glass 80-000-1004

- USP compliant Vessel, UV resistant glass, numbered with certificate of compliance 85-000-1004

- Full-Teflon Paddle and Shafts (one piece mould); numbered

MagniShaft	84-000-7001
UniShaft	84-010-7001
St. Steel	84-010-7002

- Full-Teflon Paddle and Shaft (one piece mould); numbered, certificate of compliance

  MagniShaft 89-000-7001
  UniShaft 89-010-7001

- Full-Teflon Basket holder and Shafts; numbered
  UniShaft 84-010-6011
  MagniShaft 89-000-6001
  St. Steel 84-010-6012

- Full-Teflon Basket holder and Shaft; numbered with certificate of compliance
  UniShaft 89-010-6001
  MagniShaft 89-000-6001

- Basket, mesh 40 90-000-6040

- Basket, mesh 40, numbered with certificate of compliance 95-000-6040

- Basket, mesh 20 90-000-6020

- Basket, mesh 20, numbered with certificate of compliance 95-000-6020

- Basket, mesh 10 90-000-6010

Other methods (USP 5, 6 etc.) and Vessel for other media volume on request

3. Video Monitoring/Recording

- Video Monitoring/Recording of Dissolution Tester 1 (6 stations). Recording of the dissolution process and time laps view with real-time dissolution curve overlay (only in combination with UV-VIS Online analysis)
  72-210-1xxx

- Video Monitoring/Recording of Dissolution Tester 2 (6 stations).Recording of the dissolution process and time laps view with real-time dissolution curve overlay (only in combination with UV-VIS Online analysis)
  72-210-2xxx

- Upgrade Software for Video Monitoring/Recording tool (in case both testers are equipped with Video Monitoring/Recording the upgrade software is only required once).
  50-050-0000

4. Filtration

The kind of filtration required depends on the product to test

- Tip Filtration by Poroplast filters (from 1 µm) attached to the sampling tube of the Sampling System comes as standard

- Double Filtration System combination of a tip filter (see above) and one membrane filter (typically from 0.45 µm) integrated in the flow of the withdrawn sample. For filtration below 1.0 µm Media Transfer Pump PVP 820 is recommended! 80-070-0955

- Automatic Filter Changer, Type AFC 825 Unit for exchange of the membrane filters after each sampling interval (selectable) with storage capacity for 8x 25 membrane filters. Media replacement only available in combination with filter exchange.
  12-085-0825

5. Sample Transfer Pump

- Sample Transfer Pump, Peristaltic 8-channel Ismatec Peristaltic Pump incl. Verderprene tubing. Usage depends (usually not below 1µm) on filter and product to be used.
  11-202-5000

- Sample Transfer Pump, Piston (high pressure) 8-channel ERWEKA valve-free Teflon/Ceramics Piston Pump. Dependant on the product this pump allows filtration down to 0.22µm due to the high pressure created. High dosage accuracy. 10-312-1201

6. Half-automated HPLC- and UV-VIS Online, HADs

- **HADs Base Module**
  HADs for HPLC Online analysis, incl. block of sealed PEEK flow-through vials, rack for up to 5 standards for calibration and system suitability, needle/syringe wash-station, media replacement, sample handling system, 1-channel syringe pump, 6-port HPLC valve and system tubing/pre configuration; for connection of 1 Dissolution Tester; for connection of 1 HPLC system with software (Agilent, Waters, Shimadzu, Merck/Hitachi etc.) Price excluding sample transfer pump, sample collection rack, software and HPLC- and UV-VIS unit! 72-210-0001-4

- **Dual System Upgrade**
  Possibility of connecting a 2nd Dissolution Tester to HADs; incl. 2nd block of sealed PEEK flow-through vials, system tubing/configuration and software upgrade.2nd Dissolution Tester and Sample Transfer Pump required! 72-211-xxxx

- **TTL Interface box** for TTL-controlled HPLC connections, e.g. Agilent 81-010-0001

- **Cable** for manual injection into Rheodyne Valve 81-010-0002

- **Rack (103+5)**
  Offline sample collection into sealed HPLC vials (103 for collection + 5 for standards), for automatic transfer to the 6-port HPLC valve 72-21x-x1xx

- **Rack (319+5)**
  Offline sample collection into sealed HPLC vials (319 for collection + 5 for standards), for automatic transfer to the 6-port HPLC valve 72-21x-x2xx

- **Rack (93+5), cooled**
  Offline sample collection (cooled; 4°C - 70°C) into sealed HPLC vials (93 for collection + 5 for standards), for automatic transfer to the 6-port HPLC valve 72-21x-x3xx

- **Rack (319+5), cooled**
  Offline sample collection (cooled; 4°C - 70°C) into sealed HPLC vials (319 for collection + 5 for standards), for automatic transfer to the 6-port HPLC valve 72-21x-x4xx

- **Software Package Disso.net**
  Software for control of Dissolution Tester/s, Automatic Filter Changer/s, Sample Transfer Pump/s and HADs 14-950-3005

- **UV-VIS integration Module**
  Integration of UV-VIS Spectrophotometer into the flow-line of the Dissolution Tester; incl. UV-VIS Spectrophotometer (ERWEKA SPM, Perkin Elmer Lambda 25 or Shimadzu 1800) with 8 position cell changer, Dissolution Kit, additional tubing/connectors and upgraded validated HADs Dissolution software for Online UV-VIS analysis incl. protocols. Excluding flow-through cuvettes! 72-21x-xx10

- **UV-VIS integration Module, Agilent**
  Integration of UV-VIS Spectrophotometer into the flow-line of the Dissolution Tester; incl. UV-VIS DAD Photometer (Agilent 8254) with 8 position cell changer, Dissolution Kit, additional tubing/connectors and upgraded validated HADs Dissolution software for Online UV-VIS analysis incl. protocols. Excluding flow-through cuvettes! 72-21x-xx2x

- Flow-Through optimized Cuvette, 20 mm 80-203-0020

- Flow-Through optimized Cuvette, 10 mm 80-203-0010

- Flow-Through optimized Cuvette, 5 mm 80-203-0005

- Flow-Through optimized Cuvette, 2 mm 80-203-0002

- Flow-Through optimized Cuvette, 1 mm 80-203-0001

PC

- PC supplied by the customer according to ERWEKA specification; delivered to ERWEKA; installation of Disso.net 62-210-1000

- PC standard PC for Disso.net software 52-210-1000

- PC High-Power PC for Disso.net with Video Monitoring 80-430-5001

Installation Services

- Installation and IQ/OQ/PVT on-site excluding travel expenses 62-210-0000

- Travel expenses for on-site installation 62-210-0001

- IQ/OQ/PVT documents in English language 62-210-9999

- IQ/OQ/PVT documents in other language than English 62-210-8999

- First PV (per Dissolution Tester) excluding travel expenses (when has to be travelled separately) 62-210-0002

- First PV, HADs excluding travel expenses (when has to be travelled separately) 62-210-0003

- Travel expenses for First PV when has to be travelled separately) 62-210-0004

ERWEKA RoboDis

With its RoboDis® ERWEKA sets the benchmark in the high-end of automated dissolution testing.
The system has been developed in close co-operation with Bayer Healthcare® and therefore reflects state-of-the-art operational know-how acquired in over 15 years of process optimization and automation in method development and quality control laboratories. The ERWEKA RoboDis® is a fully automatic Dissolution Tester capable of carrying out up to 20 USP Apparatus 1 or 2 tests.

2-in-1
The RoboDis includes two 8-station Dissolution Testers which are operated by an industrial 3-axis Robot.
The use of 2 Dissolution Testers increases the throughput over other automated Dissolution Systems.

Vessel Filling
As standard the RoboDis® offers volumetric filling of the vessels.
The actual filling level of each vessel is controlled and documented by control weighing.
Optionally a medium selector is available which offers using up to 6 kinds of media.

Cleaning
On completion of the test-run the vessels are emptied by sucking (no valves in the vessel), remaining tablet debris can be dissolved by cleaning solution or sucked out by a special sucking arm and the complete system is rinsed/sprayed by either water, hot water or a combination of cleaning solution and water.
A valve allows splitting the used media into either standard waste water and contaminated waste water.

Methods
The RoboDis® is designed for the fully automated performance of up to 20 dissolution tests according to the latest USP/Pharm.Eur./JP requirements. It supports the following methods and processes:
- Performance of tests with USP Apparatus 1 and 2
- Alternate use of method from Apparatus 1 to 2 and vice versa
- USP compliant Basket start routine
- Use of “Japan Sinkers”

The ERWEKA RoboDis is a fully automatic Dissolution Tester capable of carrying out up to 20 USP Apparatus 2 and 16 USP Apparatus 1 tests.

Filtration
Filtration can be performed by either Tip-Filters dependant on the analysis system used.

Analytics
The RoboDis® offers maximum flexibility concerning the analytical method applied as well as full visual supervision of the dissolution process:

- UV-VIS “in-vitro” measuring based on fiber optics (no Multiplexer used)
- Online measuring based on UV-VIS and/or HPLC analysis
- Measuring of calibration and control standards in case of online-operations

System Control

- 21 CFR Part 11 compliant Windows based software package
- SQL Database
- Online-control of rpm and temperature in each individual vessel and in the bath

Video Controlling
Additionally the RoboDis® offers Video analysis of dissolution process in time-lapse mode with overlapping real-time dissolution curve to show effects of i.e. coning etc..

Compliance
The RoboDis® is compliant with all other relevant regulatory standards in the pharmaceutical industry such as:

- 21 CFR Part 11
- GAMP (current edition)
- CGMP (FDA)
- GMP Guidelines of the EU
- EMC directive according to EN 61010
- Guidelines of US Pharmaceutical Manufacturer is Association (PMA)

1. Base Unit

- RoboDis, Base Module with 7 test-station dissolution tester for USP 2 Paddle method. Media feeding from one external container, volumetric media dosing with weight control, sample insert, media disposal and vessel/stirrer cleaning. Including digital robot, heated water bath with holding plate for 7 vessels, PH-Monitoring, PTFE sample storage magazine (10x 6), connection for air supply, connection of cleaning- and waste water by magnetic valves.
  40-070-0000

- PC supplied by the customer according to ERWEKA specification. Installation on-site
  5002

- Standard PC for Disso.net software
  5000

- High-Power PC for Disso.net only for Video Monitoring 5001

- Software Package Disso.net
  Software for control of RoboDis Base Module, including control of media switch and media degassing container 6000

2. Options

- USP compliant Vessel, glass, standard
  2000

- USP compliant Vessel, glass, numbered with certificate of compliance 2001

- USP compliant Vessel, UV resistant brown glass 2002

- USP compliant Vessel, UV resistant brown glass, numbered with certificate of compliance 2003

- USP compliant Shaft with Paddle, st.steel
  2010

- USP compliant Shaft with Paddle, st.steel; numbered with certificate of compliance
  2011

3. Extensions

- Media Degassing and pre-heating automated integrated container for pre-heating and automated degassing by vacuum. 3000
- Media Switch, automated Valve for connection of up to 6 pre-mixed media 3001
- Media Container made from PVC; 120 l. volume; mobile on wheels; with outlet; optionally color coated 3100
- Media Container made from PVC; 120 l. volume; mobile on wheels; with outlet; with integrated magnetic stirrer; optionally color coated 3101
- 2nd Dissolution Tester integrated second 8 test station Dissolution Tester for USP 2 Paddle method, integrated and handled by the RoboDis robot for fully automated operation, including media dosing/filling, sample insert, media disposal and vessel/stirrer cleaning.
  Water bath with a 2nd flow-through heating system and holding plate for 8 vessels is included. 1507
- Upgrade Software for Disso.net handling two Dissolution Testers 6004
- 2nd sample storage magazine, for Paddle use PTFE magazine (10x 6 samples), right side. For up to 20 automated test runs 3600
- Japanese sinker handling collection tool for Japanese sinkers, tool-stand and collection container incl. sensor for check of removal 4000
- Upgrade Software for handling Japanese Sinker tool 6001
- Video Monitoring/Recording of Dissolution Tester 1 (6 stations). Recording of the dissolution process and time laps view with real-time dissolution curve overlay (only in combination with Fibre-Optics/UV-VIS Online analysis) 4100
- Video Monitoring/Recording of Dissolution Tester 2 (6 stations). Recording of the dissolution process and time laps view with real-time dissolution curve overlay (only in combination with Fiber-Optics/UV-VIS Online analysis) 4101
- Upgrade Software for Video Monitoring/Recording tool (in case both testers are equipped with Video Monitoring/Recording the upgrade software is only required once). 6002

4. Basket Handling Module

- Basket Exchange Module for fitting of preloaded USP compliant Baskets (mesh 10/20/40 available) as well as Basket removal on completion of the test-run. Excluding Baskets and Rack for storage of the preloaded Baskets 9000
- Basket storage magazine for max. 8x 6 Baskets, right side. For up to 15 automated test runs (10x Paddle- and 8x Basket method) 9005
- Basket storage magazine (instead standard sample storage magazine, left) for max. 8x 6 Baskets, left side. For up to 16 automated Basket test runs (in combination with Item-No. 9005) 9004
- Basket, mesh 40; incl. holder 9040
- Basket, mesh 40, numbered with certificate of compliance; incl. holder 9045
- Basket, mesh 20; incl. holder 9020
- Basket, mesh 20, numbered with certificate of compliance; incl. holder 9025
- Basket, mesh 10; incl. holder 9010
- Software Module for Basket Module integration into Disso.net 6009

Fibre Optics UV-VIS Online

- Fiber Optics UV-VIS System Module in-situ measurement of the absorption (exchangeable tips for various path-length) in either one or two dissolution testers, incl. calibration and verification routine. In combination with the Video Recording/Monitoring option this Module allows to record a time-laps movie with real time dissolution result overlay. Comprising of: ZEISS DAD Photometer, Type MCS 651 UV, complete with light conductor (2x 3m) with Optrode, Type Hellman QX for below Tips (optimized for Dissolution use), Cover (stand) for Photometer, configuration and fiber optic cabling, Container for standard solutions (10), Tool hand for operation of fiber optics UV-VIS Optrode, incl. cleaning/drying station and PT 100 temperature sensor. 7000

- Software Module for fiber optics UV-VIS integration into Disso.net 6003

- 20 mm path length tips for attaching to standard Optrode 7020

- 10 mm path length tips for attaching to standard Optrode 7010

- 5 mm path length tips for attaching to standard Optrode 7005

- 2 mm path length tips for attaching to standard Optrode 7002

- 1 mm path length tips for attaching to standard Optrode 7001

Dissolution Accessories

Glassware for Dissolution

Polycarbonate, 1000 ml

80-000-1001
USP round-bottomed vessel, made of plastics, 1000 ml

Glass, 1000 ml

80-000-1002
USP round-bottomed vessel with stand, made of glass, numbered, 1000 ml

85-000-1002
USP round-bottomed vessel with stand, made of glass, numbered with certificate of compliance, 1000 ml

80-000-1004
UV-resistant USP round-bottomed vessel with stand, made of glass, 1000 ml

85-000-1004
UV-resistant USP round-bottomed vessel with stand, made of glass, numbered with certificate of compliance, 1000 ml

Glass, 2000 ml

80-000-2002
USP round-bottomed vessel with stand, made of glass, numbered, 2000 ml

85-000-2002
USP round-bottomed vessel with stand, made of glass, numbered with certificate of compliance, 2000 ml

80-000-2004
UV-resistant USP round-bottomed vessel with stand, made of glass, 2000 ml

85-000-2004
UV-resistant USP round-bottomed vessel with stand, made of glass, numbered with certificate of compliance, 2000 ml

As of 2010 1000 and 2000 ml vessels will be delivered with integrated stand. The stand is made of Polyoxymethylene-Delrin® and can be removed - if necessary.

Glass, 4000 ml

80-000-4002
USP round-bottomed vessel, made of glass, 4000 ml

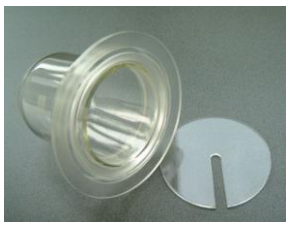
85-000-4002
USP round-bottomed vessel, made of glass with certificate of compliance, 4000 ml

Glass, 250 ml

80-000-0202
Round-bottomed vessel, made of glass, 250 ml

80-000-0204
Round-bottomed vessel, glass, 250 ml

Conversion Kit for 250 ml Vessels



84-000-9200
Conversion Kit for holding Mini-Vessel (1) in standard Vessel opening; comprising of adapter ring and cover (without Mini-Vessel); for High-Head use

Conversion Kit for conversion from 1000 ml to 250 ml with Mini Paddle

81-000-7303
Conversion Kit LH

81-000-7213
Conversion Kit HH

Stirring Elements
USP apparatus 1 (Basket)

1. MagniShaft
Basket holders and shafts

84-000-6011 Basket holder with upper shaft (integrated in drive head) and lower shaft (Teflon) for 1000 ml vessel – with O-ring and spring, numbered; for Low-Head use

89-000-6001 Basket holder with upper shaft (integrated in drive head) and lower shaft (Teflon) for 1000 ml vessel – with spring, numbered with certificate of compliance; for Low-Head use

84-000-6012 Reduced price (elimination of upper shaft) when ordering in addition to Paddles)

2. UniShaft
Basket holders and shafts

84-010-6011 Basket holder with upper shaft (integrated in drive head) and lower shaft (Teflon) for 1000 ml vessel – with O-ring and spring, numbered; for Low-Head use

89-010-6001 Basket holder with upper shaft (integrated in drive head) and lower shaft (Teflon) for 1000 ml vessel – with spring, numbered with certificate of compliance; for Low-Head use

84-020-6011 Basket holder with upper shaft (integrated in drive head) and lower shaft (Teflon) for 1000 ml vessel – with O-ring and spring, numbered; for High-Head use

89-020-6001 Basket holder with upper shaft (integrated in drive head) and lower shaft (Teflon) for 1000 ml vessel – with spring, numbered with certificate of compliance; for High-Head use

84-030-6011 Basket holder with upper shaft (integrated in drive head) and lower shaft (Teflon) for 2000 ml vessel – with O-ring and spring, numbered; for High-Head use

89-030-6001 Basket holder with upper shaft (integrated in drive head) and lower shaft (Teflon) for 2000 ml vessel – with spring, numbered with certificate of compliance; for High-Head use

84-040-6011 Basket holder with upper shaft (integrated in drive head) and lower shaft (Teflon) for 4000 ml vessel – with O-ring and spring, numbered; for High-Head use

89-040-6001 Basket holder with upper shaft (integrated in drive head) and lower shaft (Teflon) for 4000 ml vessel – with spring, numbered with certificate of compliance; for High-Head use

84-000-6012 Reduced price (elimination of upper shaft) when ordering in addition to Paddles)

Baskets; for UniShaft & MagniShaft

90-000-6040
USP Basket **mesh 40**, numbered

95-000-6040
USP Basket **mesh 40**, numbered with certificate of compliance

90-000-6020
USP Basket **mesh 20**, numbered

95-000-6020
USP Basket **mesh 20**, numbered with certificate of compliance

90-000-6010
USP Basket **mesh 10**, numbered

70-000-5004
Suppository Basket, plastic

USP apparatus 2 (Paddle)

1. MagniShaft
Paddles and Shafts

84-000-7001 Upper shaft (integrated in drive head) and lower shaft with Paddle (Teflon), for 1000 ml vessel, numbered; for Low-Head use

89-000-7001 Upper shaft (integrated in drive head) and lower shaft with Paddle (Teflon), for 1000 ml vessel, numbered with certificate of compliance; for Low-Head use

84-000-7301 Upper shaft (integrated in drive head) and lower shaft with Mini-Paddle (stainless steel), for 250 ml vessel, numbered; for Low-Head use

1. UniShaft
Paddles and Shafts

84-010-7001 Upper shaft (integrated in drive head) and lower shaft with Paddle (Teflon), for **1000 ml** vessel, numbered; for Low-Head use

89-010-7001 Upper shaft (integrated in drive head) and lower shaft with Paddle (Teflon), for **1000 ml** vessel, numbered with certificate of compliance; for Low-Head use

84-010-7301 Upper shaft (integrated in drive head) and lower shaft with Mini-Paddle (stainless steel), for **250 ml** vessel, numbered; for Low-Head use

84-020-7001 Upper shaft (integrated in drive head) and lower shaft with Paddle (Teflon), for **1000 ml vessel**, numbered; for High-Head use

89-020-7001 Upper shaft (integrated in drive head) and lower shaft with Paddle (Teflon), for **1000 ml** vessel, numbered with certificate of compliance; for High-Head use

84-020-7301 Upper shaft (integrated in drive head) and lower shaft with Mini-Paddle (stainless steel), for **250 ml** vessel, numbered; for High-Head use

84-030-7001 Upper shaft (integrated in drive head) and lower shaft with Paddle (Teflon), for **2000 ml** vessel, numbered; for High-Head use

89-030-7001 Upper shaft (integrated in drive head) and lower shaft with Paddle (Teflon), for **2000 ml** vessel, numbered with certificate of compliance; for Low-Head use

84-040-7001 Upper shaft (integrated in drive head) and lower shaft with Paddle (Teflon), for **4000 ml** vessel, numbered; for High-Head use

89-040-7001 Upper shaft (integrated in drive head) and lower shaft with Paddle (Teflon), for **4000 ml** vessel, numbered with certificate of compliance; for High-Head use

Apparatus 5
(Paddle over Disc)

1. MagniShaft
Paddles and Shafts

84-050-7002 Upper shaft (integrated in drive head) and lower shaft with Paddle (Teflon) for USP 5, numbered; for Low-Head use

89-050-7002 Upper shaft (integrated in drive head) and lower shaft with Paddle (Teflon) for USP 5, numbered with certificate of compliance; for Low-Head use

84-000-6012 ***Reduced price (elimination of upper shaft) when ordering in addition to Paddles and/or Baskets)***

2. UniShaft
Spacers

84-050-7003 Spacer to adjust standard Paddle system for USP method 5 specified height

USP method 5 Discs

80-000-8040 EP method 5 specified disc, 125 µm mesh size

85-000-8040 EP method 5 specified disc, 125 µm mesh size, numbered with certificate of conformity

USP apparatus 6
(Rotating Cylinder) UniShaft

81-000-9000
USP st.steel Rotating Cylinder, short version, to screw to Shaft; for Low-Head use

86-000-9000
USP st.steel Rotating Cylinder, short version, numbered with certificate of conformity, to screw to Shaft; for Low-Head use

81-000-9010
USP st.steel Rotating Cylinder, long version, to screw to Shaft; for Low-Head use

86-000-9010
USP st.steel Rotating Cylinder, long version, numbered with certificate of conformity, to screw to Shaft; for Low-Head use

81-000-9001
USP st.steel Rotating Cylinder, short version, to screw to Shaft; for High-Head use

86-000-9001
USP st.steel Rotating Cylinder, short version, numbered with certificate of conformity, to screw to Shaft; for High-Head use

81-000-9011
USP st.steel Rotating Cylinder, long version, to screw to Shaft; for High-Head use

86-000-9011
USP st.steel Rotating Cylinder, long version, numbered with certificate of conformity, to screw to Shaft; for High-Head use

Enhancer Cell MagniShaft

- Enhancer cell, Teflon 80-000-7900

- Enhancer cell kit, Teflon, including 250 ml round-bottomed vessel made of glass, Teflon coated st.steel mini-paddle and conversion kit to hold the 250 ml vessel; for **High-Head** use 84-000-7900

- Enhancer cell kit, Teflon, including 250 ml round-bottomed vessel made of glass, Teflon coated st.steel mini-paddle and conversion kit to hold the 250 ml vessel; for **Low-Head** use 84-000-7901

Extraction cell

81-xx0-0000 The cell is described in EP 2.9.4 Kap. 2 additional stirrer required.

Felodipine Basket (Stationary Basket) MagniShaft/UniShaft

Comprising of 1x Felodipine Basket with Holder and 1x V-shaped Vessel-Cover with thread to screw Felodipine Basket; for Low-Head use 84-000-4100 for 1000 ml High Head use, comprising of 1x Felodipine Basket with Holder and 1x Vessel Cover with thread to screw Felodipine Basket

84-100-4100

84-060-4100 V-shaped Low-Head Vessel–Cover, plastic, for fixing Felodipine Basket; additional delivery

84-061-4100 V-shaped Low-Head Vessel–Cover, Teflon, for fixing Felodipine Basket; additional delivery

84-160-4100 Low-Evaporation High-Head Vessel-Cover for fixing Felodipine Basket

Intrinsic Dissolution (Wood Apparatus) UniShaft only

ERWEKA Wood Apparatus with 10 mm² surface area. The tool includes hardened punch, controlled surface area and improved die design.

- Complete set including holder, punch, die, intrinsic die and surface plate; for Low-Head use 80-000-9900

- Complete set including holder, punch, die, intrinsic die and surface plate; for High-Head use 80-100-9900

- Manual Hydraulic Press for compaction of the powder or granulate inside the controlled surface area. Max. pressure force 10.0 tons 70-000-9900

Dissolution Consumables

Filters for manual and automated sampling

To connect to automatic sampling station of DT 90, DT 80, DT 70, DT 80, DT 700, DT 800, DT 720 and DT 820 as well as for fixed sampling tubes and manual sampling manifold.

70-000-2025 Set (25) of Filters, Poroplast, 1µm
70-000-2100 Set (100) of Filters, Poroplast, 1µm
70-000-2999 Set (1000) of Filters, Poroplast, 1µm
70-000-3025 Set (25) of Filters, Poroplast, 4µm
70-000-3100 Set (100) of Filters, Poroplast, 4µm
70-000-3999 Set (1000) of Filters, Poroplast, 4µm

70-000-4025
Set (25) of Filters, Poroplast, 10µm

70-000-4100
Set (100) of Filters, Poroplast, 10µm

70-000-4999
Set (1000) of Filters, Poroplast, 10µm

70-000-5025 Set (25) of Filters, Poroplast, 20µm
70-000-5100 Set (100) of Filters, Poroplast, 20µm
70-000-5999 Set (1000) of Filters, Poroplast, 20µm

70-000-6002
Pre-Filters, st. steel, 20µm

70-000-6005
Pre-Filters, st. steel, 50µm

70-000-6001
Pre-Filters, st. steel, 100µm

Membrane Filters for Double Filtration System and AFC 825 Filter Changer

82-085-0101 1 Pack (200) of Filters, Membrane 1µm ROBY
82-085-0102 1 Pack (200) of Filters, Membrane 0,7µm ROBY
82-085-0103 1 Pack (200) of Filters, Membrane 0,45µm ROBY

Manual sampling manifold

10-096-0006
Manual sampling manifolds (basic) for ERWEKA Low–Head use. Comprising of syringe and st. steel sampling tube; 6x

14-096-0001
For Low-Head Paddle use. Consisting of a syringe, LUER connector, st. steel sampling tube with height adjustment marks and adjustable holder for USP/EP/JP compliant sample withdraw (midway between top for paddle and surface of media)

14-096-0011
Ditto., but with Titanium sampling tube

84-096-0001
Additional st.steel sampling tube with marks and holder for Low-Head Basket use.

80-096-0011
Ditto., but Titanium sampling tube

14-096-0002
For High-Head Paddle use. Consisting of a syringe, LUER connector, st. steel sampling tube with height adjustment marks and adjustable holder for USP/EP/ JP compliant sample withdraw (midway between top for basket and surface of media)

14-096-0012
Ditto., but with Titanium sampling tube

84-096-0002
Additional st. steel sampling tube with marks and holder for High-Head Basket use.

84-096-0012
Ditto., but Titanium sampling tube

14-096-0006
Syringe connected to stainless steel sampling probe; for High- and Low-Head use

10-096-0003
Eppendorf Sampling Pipette for Low-Head Dissolution Testers. One-hand operation

Sinkers

70-000-5000
"Japanese" Type of sinker, st.steel 316, not magnetic, set of 6

70-000-5001
"Spider" Type of sinker, plastics, set of 6

70-000-5002
St.steel 316 wire, 50 m, diameter 0.5 mm

Tubing and Connectors

- Teflon tubing, 1.6 mm o.d., 25 m
  90-200-0016
- Teflon tubing, 3.0 mm o.d., 25 m
  90-200-0030
- Verderprene tubing, 25 m
  90-200-0020
- PEEK Tubing, 2.1 mm o.d., 25 m
  90-200-0021
- Set (10) of tubing connectors for Teflon tubing 1.6 mm o.d.
  90-200-0116
- Set (10) of tubing connectors for Teflon tubing 3.0 mm o.d.
  90-200-0130

IQ/OQ/PVT documents for Dissolution Testers and Dissolution Systems

66-064-9999	IQ/OQ/PVT documents for ERWEKA DT x20 Series
65-098-9999	IQ/OQ/PVT documents for ERWEKA Flow-Through-Cell Dissolution Tester, Type DFZ 720/T
75-203-x999	IQ/OQ/PVT document for Off-/ Online System

USP Reference Tablets and Standards (PVT)

66-001-0001	1 bottle (30) of USP Reference Tablets, Prednisone
66-001-0003	250 mg of Standard for Prednisone

Qualification tools for Dissolution Testers Manual QA-Station

69-001-0011
Standard Qualification (certified)

Includes:
- Electronic RPM measuring unit
- Horizontal measurement tool
- Wobble and centricity measuring unit
- Qualification tool for height of method
- Digital Thermometer

Qualification Tool Kit for Mechanical Qualification according to FDA (USP method 1 and 2, certified)

Includes:

- Guidance adapter
- Digital level with measurement adapter
- Clamp for meter (measurement of the wobble)
- Clamp for digital tachometer (measurement of the agitation speed)
- Angular probe
- Digital gauge
- Measuring tips, extensions of meter, measurement plate
- Qualified UniShaft including actuator
- Qualified MagniShaft
- Tool for stirring height
- Gap gauge
- Digital tachometer
- Reflection strip for tachometer
- Digital pocket thermometer
- Disk
- Hexagon wrench

UniShaft 69-002-1021
MagniShaft 69-002-1121

Qualification Tool Kit for Mechanical Qualification – Upgrade Kit without digital thermometer and electronic RPM measurement unit
UniShaft 69-002-1031
MagniShaft 69-002-1041

80-124-0003
Holder for former ERWEKA dissolution tester, DT 70 / 80, DT 6 / /R to handle wobble measurement device, tachometer and spirit-level

99-001-0001
Electronic RPM measurement unit, contact less; including reflector marks (35)

90-001-0003
Spare Reflector Marks (35) for speed

70-001-0001
Horizontality measurement tool

75-002-0003
Immersion thermometer with certificate

85-001-0003
Digital thermometer with certificate

99-001-0002
Wobble and Centricity measurement unit, certified

95-001-0005
Qualification tool for height adjustment of Basket, and Rotating Cylinder, numbered with certificate of conformity

Dissolution Tester (USP apparatus 3 and 7)

CALEVA BioDis

Dissolution Tester with 6, 7 or 8 rows

The CALEVA RRT 10 is the perfect unit for multiple media change and complies with USP apparatus 3 and method 7 (optionally switchable without the need of tools, within approx. 1 minute). It is the perfect solution for multiple pH change due to the 6, 7 or 8 rows of vessels, 6 test stations and 2 reference positions or 7 test stations (optionally) each. The vessels are located in a heated water bath which is heated by an external heating system. The unique left to right movement allows easy access and visibility to each row. Additionally there is no software or head unit to attract corrosion.
The RRT 10 is operated by a removable touchscreen. Media loss by evaporation is prevented by an automated covering system.
Optionally a sampling station for automation is available.

- ✓ 6, 7 or 8 rows, each with 6 stations and 2 vials for reference purposes, optionally 7 test-stations of the same capacity
- ✓ Cylindrical flat bottomed glass vessels 300 ml (media volume) for USP method 3
- ✓ Glass reciprocating cylinders fitted with mesh screens top and bottom
- ✓ Speed adjustable from 5-40 strokes/min., accuracy better than +\- 0.5%, height of stroke 100 mm (USP 3) and 20 mm (USP 7)
- ✓ Acrylic glass water bath, 6 mm
- ✓ Agitator shafts made of 316 stainless steel, vessel racks in Teflon coated stainless steel
- ✓ Cylinders will automatically centre inside the vessels
- ✓ Evaporation losses are prevented by a covering system
- ✓ Internal machine software permits manual control of the unit through the portable touch screen. Increasing levels of offline automation are available through the internal software but further online automation is available using a PC with Windows Software.

RRT 10 (for USP 3 use), with 6 rows, each 6 test positions + 2 reference position

230V/50Hz	72-226-0001
230V/60Hz	72-226-0002
115V/60Hz	72-226-0003
127V/60Hz	72-226-0004

RRT 10 (for USP 3 use), with 6 rows, each 7 test positions

230V/50Hz	72-227-0001
230V/60Hz	72-227-0002
115V/60Hz	72-227-0003
127V/60Hz	72-227-0004

RRT 10 (for USP 7 use), with 6 rows, each 6 test positions + 2 reference position

230V/50Hz	72-228-0001
230V/60Hz	72-228-0002
115V/60Hz	72-228-0003
127V/60Hz	72-228-0004

RRT 10 (for USP 7 use), with 6 rows, each 7 test positions

230V/50Hz	72-229-0001
230V/60Hz	72-229-0002
115V/60Hz	72-229-0003
127V/60Hz	72-229-0004

Options, general

RRT 10 for both, USP 3 and 7 use, switchable by the user within minutes; automated recognition in which mode it works.
Removable user interface for control by touch screen instead software for PC operation.

⏩ 7^{th} row	72-22x-1xxx
⏩ 7^{th} and 8^{th} row	72-22x-2xxx

USP 3 Options

⏩ 1000 ml conversion kit
Comprising of 4x 3 1000 ml vessel, 12x adaptor for rack, 12x evaporation cover and 12 adaptors for vessel 82-226-1003

USP 7 Options

- 1000 ml conversion kit
  Comprising of 4x 3 1000 ml vessel, 12x adaptor for rack, 12x evaporation cover and 12 adaptors for vessel 82-226-1007
- 100 ml conversion kit
  Comprising of 48x 100 ml vessel, 48x adaptor for rack, 48x evaporation cover and 48 adaptors for vessel 82-226-0107
- 50 ml conversion kit comprising of 48x 50 ml vessel, 48x adaptor for rack, 48x evaporation cover and 48 adaptors for vessel 82-226-0057
- Spring Holder, USP, 1.45 inch (for use with 300 and 1000 ml vessels) 82-226-7001
- Spring Holder, USP, 1.40 inch (for use with 50, 100, 300 and 1000 ml vessels) 82-226-7002
- Spring Holder, USP, 0.96 inch (for use with 50, 100, 300 and 1000 ml vessels) 82-226-7003
- Spring Holder, USP, 0.60 inch (for use with 50, 100, 300 and 1000 ml vessels) 82-226-7004
- Acrylic Rod, USP (for use with 50, 100, 300 and 1000 ml vessels) 82-226-7005
- Cylinder Transdermal Holder, USP (for use with 300 and 1000 ml vessels) 82-226-7006
- Reciprocating Disc, USP, 1.6 cm^2 (for use with 50, 100, 300 and 1000 ml vessels) 82-226-7007
- Reciprocating Disc, USP, 2.5 cm^2 (for use with 100, 300 and 1000 ml vessels) 82-226-7008
- Reciprocating Disc, USP, 5.0 cm^2 (for use with 300 and 1000 ml vessels) 82-226-7009
- Reciprocating Disc, USP, 7.0 cm^2 (for use with 300 and 1000 ml vessels) 82-226-7010
- Angeled Disc, USP, 1.98 inch (for use with 1000 ml vessels) 82-226-7011
- Angeled Disc, USP, 1.42 inch (for use with 300 and 1000 ml vessels) 82-226-7012

Qualification

- IQ/OQ/PVT Document 66-121-9999
- IQ/OQ/PVT tool kit, certified (includes: Digital Tachometer, Calibrated Thermometer, Steel Ruler, Stopwatch) 65-121-0000
- Bottle (60) Chlorpheniramine Maleate Tablets 85-120-0000
- 1 Set = 60 Tablets USP Chlorpheniramine Maleate extended Release Tablets 85-120-0001
- 1 Set = 125 mg USP Chlorpeniramine Maleate Standard 85-120-0003

Dissolution Tester (USP apparatus 4)

ERWEKA DFZ 720

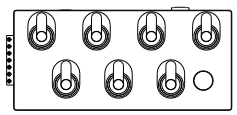
Flow-Through-Cell with 7 stations according to USP apparatus 4

The ERWEKA DFZ Dissolution Testers offer the typical advantages of USP apparatus 4 but eliminate the typical disadvantages.
ERWEKA designed a new valve-free pump with automatic deaeration and volume adjustment.

- ✓ DHC 2000i – flow heater with 2 temp. sensors, 1x internal and 1x external for the water bath
- ✓ Water distribution system
- ✓ One three-way valve for control of the water flow
- ✓ Plastic support plate for the cells
- ✓ Deep drawn tray water bath + metal housing incl. view window
- ✓ Immersion thermometer for control of the temperature in the water bath
- ✓ "Quick-Screw" closing system for the cells
- ✓ Teflon tubing 1.6 mm or 3.0 mm o.d.

7 Cell type with immersion thermometer to control the temperature in the water bath

7 cell type,
excluding cells



230V/50Hz	13-012-0001
230V/60Hz	13-012-0002
115V/60Hz	13-012-0003
127V/60Hz	13-012-0004

The DFZ is without cells. The cells can be selected under options

ERWEKA USP apparatus 4

Pump, HKP 720

The valve-free ERWEKA Piston Pump HKP 720 is specially designed for the use with USP apparatus 4 Flow-Through-Cell. In standard configuration it offers a flow rate from 2.0 ml to 32.0 ml at 120 strokes/minute and an accuracy of 5%. Unlike other USP 4 pumps the HKP 720 offers automated deaeration at the start of the operation.
The required flow rate is just pre-set by the integrated menu and the HKP 720 will adjust the requested flow rate by itself.
There are no valves incorporated in the HKP 720 to eliminate the problems of particles sticking.

- ✓ 7-channels
- ✓ Valve-free design
- ✓ Automatic deaeration of the pump heads
- ✓ Pump heads made of Teflon and ceramics
- ✓ High Accuracy (5 %)
- ✓ Automatic flow rate adjustment
- ✓ Parallel printer interface for documentation of strokes/min.
- ✓ Serial RS 232 interface for external control
- ✓ Teflon tubing

Flow rate from 2.0 to 32.0 ml/min at 120 strokes/min., Teflon tubing 1.6 mm o.d.
100-240V/50-60Hz 10-312-1200

Spare Part Kit for HKP 720 90-312-xx00

Options

Peristaltic Pump for Low-Flow

The standard ERWEKA 8-channel Peristaltic Pump for transfer of the sample from the media container through the test-stations of the Flow-Through-Cell Dissolution Tester.
The media flow rate can be chosen by the speed of the pump as well as Off-times (foil keys and LC display).
The pump can either be controlled stand alone, by the SE or by the ERWEKA Disso.net software via the RS 232 serial interface.

- ✓ 8-channel Peristaltic Pump
- ✓ Accuracy of volume ± 15%
- ✓ RS 232 serial interface
- ✓ Touch sensitive keys and LC display
- ✓ Verderprene tubing for elimination of absorption of active ingredients by PVC tubing

230V/50Hz	11-202-5001
230V/60Hz	11-202-5002
115V/60Hz	11-202-5003
127V/60Hz	11-202-5004

- Media Transfer Station, Type LMT, to create a “Close-Loop” system.
  Thermostatically heated water bath with 6x 1000 ml beaker glasses, stand with magnetic stirrer for each beaker glass, Teflon tubing 80-012-1000

Filters for Flow-Through-Cell

Filter for USP 4; 0.7 µm; 25 pcs; 15 mm
70-212-1507

Filter for USP 4; 1.4 µm; 25 pcs; 15 mm
70-212-1514

Filter for USP 4; 0.7 µm; 25 pcs; 22 mm
70-212-2207

Filter for USP 4; 1.4 µm; 25 pcs; 25 mm
70-212-2214

Glass beads

Granulate Set with beads 1mm and 6mm, 200mg 80-212-1300

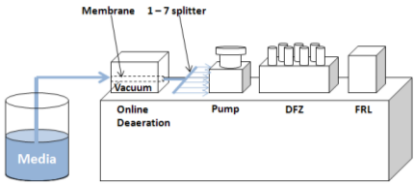
ph change valve

Manual switching valve for pH media change
80-012-0000

Electronic switching valve for up to 1 media changes (only in combination with System Control Unit, type SE) 80-012-0003

Electronic switching valve for up to 3 media changes (only in combination with System Control Unit, type SE) 80-012-0003

Online Deaeration Device (only in the pH range of 4 to 6.5) 80-012-0004



Splitter (from one tube to seven tubes)
80-012-0005

80-012-0007
Set (7) of USP 12.0 mm Cell

80-012-1007
Set (7) of USP 22.6 mm Cell

80-012-2007
Set (7) of PhEur 2.9.42 Suppository Cell

80-012-3007
Set (7) of USP Granulate & Powder Cell

80-012-4007
Set (7) of USP Implant Cell

- Media temperature measurement in each cell by integrated electronic PT 100 temperature sensors (temperature displayed and printed by Control Unit, Type SE)
  10-013-xxxx
- Media Transfer Station, Type LMT, to create a “Closed Loop” system. Thermostatically heated water bath with 6x 1000 ml beaker glasses, stand with magnetic stirrer for each beaker glass, Teflon tubing
  80-012-1000
- Seven three-way valves for individual control of each cell. Test-stations arranged in line 13-01x-x1xx
- Tubing, Teflon 3.0 mm o.d.
  10-01x-xx1x
- Water Stabiliser with colour indicator, 1 bottle 80-080-0002
- Set (7 pcs.) off USP Tablet holders
  Typ A for 22.6 mm Cell 80-012-0016
  Typ B for 12.0 mm Cell 80-012-0017

Dissolution Systems

ERWEKA Dissolution System Open - Loop Offline Kit
(storage and control only)

1. USP apparatus 4 Dissolution Tester

1. Autosampler FRL 704

The ERWEKA USP 4 Fraction Collector, Type Autosampler 704 allows collection of an average of the flow-through in max. 16 intervals from up to 6 or 7 test stations (max. 25 ml each). Via the system control unit, type SE; all sample parameters can be entered.

- ✓ Collection of an “average” by valves
- ✓ Collects from up to 7 test stations; max. 16 sampling cycles
- ✓ Rack for 16x 8 samples (only 6 rows usable with DFZ 720) with glass tubes, 25 ml
- ✓ RS 232 and RS 485 interfaces for external control
- ✓ Interface for USP 4 Pump

Racks

Rack for 16x 8, glass tubes of 25 ml volume

2. System Control Unit, Type SE

The System Control Unit allows controlling automated Media Change Valve Unit (up to 3 media changes), HKP 720 USP 4 compliant Piston Pump and Fraction Collector FRL 704. The System Control Unit allows storing test-run parameters for up to 40 different products which may be recalled for testing. The Unit comes with alpha-numeric membrane keypad and illuminated LC display. For documentation purpose a standard printer may be connected.

3. System Pre-Configuration

Control and pre-configuration of the complete system at the ERWEKA laboratory. Control of function and numbering of all tubes and interface cables for easy connection at the customers site.

4. System Tubing

System tubing, complete with tubing and connectors, Teflon 1.6 mm o.d.

!!!Open-Loop Offline Kit System Price includes the FRL 704/SE kit (incl. 25ml rack, tubing, pre-configuration. The DFZ and the HKP must be selected additionally)

230V/50Hz	71-010-0001
230V/60Hz	71-010-0002
115V/60Hz	71-010-0003
127V/60Hz	71-010-0004

Options

1. Racks

- Rack for 24x 8 HPLC vials of 4.0 ml volume 80-200-0002
- Rack for 16x 8 glass tubes of 10 ml volume 80-200-0004

2. ph change valve

- Manual switching valve for pH media change 80-012-0000
- Electronic switching valve for up to 1 media changes 80-012-0003
- Electronic switching valve for up to 3 media changes 80-012-0004

ERWEKA Dissolution System Closed - Loop Offline Kit

(to complete the DFZ Closed Loop system required one; HKP, LMT, DFZ)

1. Autosampler

The ERWEKA standard USP 4 Fraction Collector, Type FRL 804 allows sampling up to 16 sampling cycles (up to 25 ml each). Via the system control unit, type SE; all sample parameters can be entered.

- ✓ Precision Dosing by a valve system
- ✓ Media replacement possible
- ✓ HPLC Vial membrane piercing
- ✓ Up to 24 sampling cycles
- ✓ Rack with 8 rows x 24 samples with HPLC vials 1,2 ml volume (optional 4.0 ml or glass tubes)
- ✓ Interfaces for external control
- ✓ Interface for USP 4 Pump

Rack for 24x 8 HPLC vials of 1,2 ml volume

2. System Control Unit, type SE

The System Control Unit allows to control automated Media Change Valve Unit (up to 3 media changes), HKP 720 USP 4 compliant Piston Pump and Fraction Collector FRL 804 as well as display of media temperatures inside the vessel (DFZ 720T only).
The System Control Unit allows storing test-run parameters for up to 40 different products which may be recalled for testing. The Unit comes with alpha-numeric membrane keypad and illuminated
LC display. For documentation purpose a standard printer may be connected.

3. Peristaltic Pump

The standard ERWEKA 8-channel Peristaltic Pump for transfer of the sample from the media container to the Flow-Through-Cell Dissolution Tester.
The media flow rate can be chosen by the speed of the pump as well as Off-times (foil keys and LC display). The pump can either be controlled stand alone, by SE or by the ERWEKA Dissolution Software via the RS 232 serial interface

- ✓ 8-channel Peristaltic Pump
- ✓ RS 232 serial interface
- ✓ Touch sensitive keys and LC display
- ✓ Verderprene tubing for elimination of absorption of active ingredients by PVC tubing

4. System Pre-Configuration

Control and pre-configuration of the complete system at the ERWEKA laboratory. Control of function and numbering of all tubes and interface cables for easy connection at the customers site.

5. System Tubing

System tubing, complete with tubing and connectors, Teflon 1.6 mm o.d.

6. Media Transfer Station LMT

- Media Transfer Station, Type LMT, to create a “Close- Loop” system.
  Thermostatically heated water bath with 7x 1000 ml beaker glass, stand with magnetic stirrer for each beaker glass, Teflon tubing
  80-012-1000

!!! Closed-Loop-Offline Kit System price includes the IPC/FRL 804/SE Kit (incl. rack for 25x 8 1.2 ml HPLC vials rack, tubing, pre-configuration). The DFZ, HKP and LMT must be selected additionally!!!

230V/50Hz	72-020-00x1
230V/60Hz	72-020-00x2
115V/60Hz	72-020-00x3
127V/60Hz	72-020-00x4

Options

1. Autosampler

- Additional price for media replacement, incl. two integrated 1-channel peristaltic pumps and a two-section acrylic glass container
  15-xx8-xxx1

2. Racks

- Rack for 24x 8 HPLC vials of 4.0 ml Volume 80-200-0002
- Rack for 24x8, with glass tubes of 10 ml volume 80-200-0003
- Rack for 16x 8, with glass tubes of 25 ml volume 80-200-0004

ERWEKA Dissolution System Closed-Loop UV-VIS Online Kit

(to complete the DFZ Closed Loop system required one; LMT, HKP, DFZ)

1. UV-VIS Spectrophotometer

Shimadzu 1800 double beam including 8 position cell changer, ready for Online Systems excl. Cuvettes

2. Dissolution System Software

Windows based CFR 21/11 compliant ERWEKA Dissolution System Software

Recommended PC configuration:

- Processor: Pentium IV 1.2 GHz
- Memory: 256 MB, HDD free space: 300 MB
- Operating system: MS Windows 2000 Professional or MS Windows XP Professional
- Screen resolution: 1024x768 (minimal), 1280x1024 (recommended)

3. System Tubing

System tubing, complete with tubing and connectors, Teflon 1.6 mm o.d., configured as Inline-System (return to vessel after analysis).

4. System Pre-Configuration

Control and pre-configuration of the complete system at the ERWEKA laboratory. Control of function and numbering of all tubes and interface cables for easy connection at the customers site.

5. Media Transfer Station LMT

Media Transfer Station, Type LMT, to create a "Close-Loop" system.
Thermostatically heated water bath with 6x1000 ml beaker glasses, stand with magnetic stirrer for each beaker glass, Teflon tubing

80-012-1000

6. Peristaltic Pump

The standard ERWEKA 8-channel Peristaltic Pump to withdraw samples from the media transfer containers (inside the LMT) to the flow-through cuvettes of the UV-Vis.

!!! Close-Loop UV-VIS Online Kit System price includes the Shimadzu 1800, IPC, Software, Tubing, pre-configuration !!!

230V/50Hz	71-030-x5x1
230V/60Hz	71-030-x5x2
115V/60Hz	71-030-x5x3
127V/60Hz	71-030-x5x4

Options

1. UV-VIS Spectrophotometers

ERWEKA SPM double beam including 8 position cell changer, ready for Online Systems.
Additional price, instead Shimadzu 1701 incl. Cell Changer

230V/50Hz	71-030-01x1
230V/60Hz	71-030-01x2
115V/60Hz	71-030-01x3
127V/60Hz	71-030-01x4

2. UV-VIS Spectrophotometers

ERWEKA SPM double beam including 16 position cell changer, ready for Online Systems.
Additional price, instead Shimadzu 1701 incl. Cell Changer

230V/50Hz	71-030-02x1
230V/60Hz	71-030-02x2
115V/60Hz	71-030-02x3
127V/60Hz	71-030-02x4

3. Sample Transfer Pump, **SP 725/25** (Syringe Pump)

The ERWEKA 7-channel Syringe Pump, Type SP 725/25 ml syringes is the ideal media transfer pump for all kind of Dissolution Systems. It offers very accurate volume flow, elimination of absorption (glass/Teflon) and o an electric 4-way valve at the in-/outlet of each syringe. This unique design allows performing all needed steps for the Dissolution Test, even dilution, media replacement and transfer from the Fraction Collector to an UV-VIS system with only one pump! The SP 725/25 is equipped with a RS 232 interface for control by the ERWEKA Disso.net software.

- ✓ 8-channel Syringe Pump
- ✓ 8 electric 4-way valves, absorption free
- ✓ Hamilton syringes 25 ml
- ✓ Accuracy of volume ± 0,1 ml (25 ml syringes)
- ✓ RS 232 serial interface
- ✓ Teflon tubing

71-030-xx1x

4. Cuvettes for UV-VIS

With Teflon Tubing (0.8 mm o.d.) and screw-fittings. For 8-position cell changers

1x Path Length 10 mm	80-203-0010
1x Path Length 5 mm	80-203-0005
1x Path Length 2 mm	80-203-0002
1x Path Length 1 mm	80-203-0001

5. ph change valve

Electronic switching valve for up to 1 media changes
80-012-0003

Dissolution Media Preparation and Dosing

ERWEKA MediPrep 120

The new bench top degasser from ERWEKA offers pre-heating, degassing and dosing of dissolution media. Dispense volumes selected from 250 ml to 1.000 ml can be chosen in steps of 10 ml with an accuracy better than ± 1%. The media is dispensed by weight using the new load cell. Nominal degassing time of 1m 30 sec. for 1.000 ml of heated media means a 6 station test can be prepared in less than 10 min. from cold media storage.
Degassing is better than 5.5 ppm. A printer is included for calibration and test print results.
Easy to use menus guide the user through each operation making media preparation easier and quicker than ever. No waiting for media tanks to heat up. Media changes are quick via the flush routine.

230V/50Hz	70-099-6001
230V/60Hz	70-099-6002
115V/60Hz	70-099-6003
127V/60Hz	70-099-6004

Media Tank

ERWEKA Media Pre-Heating Tank MT66, MT120, and MT160 (for connection to MediPrep 120). For your media storage ERWEKA offers tanks made of Polyethilen or st.steel (66 l, 120 l, or 160 l volume – other sizes on request.) The tanks pre-heat the media and can be moved around the laboratory on 3” diameter casters. Media is heated by means of the integrated 1.500 Watts (at 230V) electronic flow through heater (therefore no stirring is required). Temperature is adjustable between 10°C and 50°C, temperature display.

Options

Dissolved oxygen meter	80-099-6200
IQ/OQ/PQ document	65-099-9999
MT 66 Media Tank	80-099-6300
MT 120 Media Tank	80-099-6400
MT 160 Media Tank	80-099-6500
Transformer for MediPrep 120 (from 110V to 230V)	80-099-6600
Glass rack for up to 3 vessels	80-099-6700

ERWEKA MultiPrep

The new degasser from ERWEKA offers pre-heating, degassing and dosing of dissolution media according to recommendations and regulations of USP, EP, FDA, GLP/GMP.
The fully automated MultiPrep cleans itself automatically and it is a compact unit which can be easily connected to other dissolution devices via the ERWEKA DISSO.NET software or can run as standalone. The easy to use menus are designed to guide users through every process. The process can be monitored via the LCD display and the numeric touch sensitive keypad with additional function keys.

- ✓ Automatic mixing of media using de-ionised water and a mix of up to 6 concentrates
- ✓ Usage of up to 2 pre-mixed media
- ✓ Degassing of the applicable media allows a minimum oxygen, leading to reliable test results
- ✓ Preparation and storage of up to 18 litres of media at a constant temperature of 37°C
- ✓ 8 separate pumps and tubings support the simultaneous filling of up to 8 vessels at the same time, ensuring identical process conditions
- ✓ Thanks to internal memory up to 60 methods and up to 11 user profiles can be saved, making the process more transparent
- ✓ Load cell locking enables transportation without damaging the balance
- ✓ Fully automatic flush (cleaning) routine using water and washing liquid. Programmed to clean container and tubings before and after every test preventing possible damage from aggressive acids.
- ✓ Completely menu guided calibration. Easy Qualification due to built-in balance.
- ✓ Qualification kit incl. weight 500g, weight 1kg, carrying case, screwdriver, tube and filter

230V/50Hz 70-099-7001

Technical Data

Display/Keypad: 4-line LCD/ Numeric touch pad with additional function keys Printer/Interface: parallel Memory: 60 methods/ 11 users Container volume: 18 litre Media types: almost all, including HCl solutions Dispencing volumes: 500ml, 750ml, 900ml, 1000ml
Dispencing accuracy: +/-1%
Temperature range: 30°C – 50°C
Temperature accuracy: +/- 0,5°C
Vacuum: max. 800 mbar
Dosing: volumetric
Mixing: gravimetric
Preparing time for 8 x 1000ml Vessels: approx. 5min
Dimensions: W413mm x D990mm x H720mm
Weight: Net 85kg

Options

- IQ/OQ/PQ Documents 65-099-9998
- Spare Part kit, including water filter, fuses and hose nozzle 91-099-0001
- Printer for documentation 80-120-0009
- Security valve with cable and plug connector to avoid damage caused by turned on water tap 70-012-0003
- Transformator to convert voltage (from 110V into 230V) 80-099-6010

Chewing Gum Tester DRT

Test equipment to masticate chewing gums, especially medicated ones for the in vitro release of substances from the samples into a surrounding liquid medium.

Up and down strokes (vertical) of the lower jaw in combination with a revolving movement of the upper jaw which provides mastication of the chewing gum and at the same time an agitation of the test medium.

For manual sampling, emptying and cleaning process the lower jaw with the test cell can be lowered into the down position and the chewing process stops. The test cell, the upper and lower jaw can be easily removed.

The temperature of the water in the test cell around the media will be controlled by a water circulation system.

- ✓ 1 (DRT 1) or 6 test stations (DRT 6)
- ✓ Revolving device for upper jaw:
  - Pneumatic drive unit, compressed air 6-8 bar, compressed air to be supplied by customer
  - The angle of the revolving movement can be adjusted between 10° – 180°
- ✓ Test Cell: Double-walled and made of glass which allows visual inspection during the test
  - Volume for dissolution medium 20-70 ml
  - Temperature controlled by a water circulation system
  - In- and outlet nozzle for the water circulation system, Test Cell can be easily removed for cleaning or changing.

  Upper jaw: Revolving according to the revolving device, no up and down movements
  - Mounted on a heat insulated holder
  - Can be easily removed for cleaning or changing (recommended after each test)
  - Distance of upper and lower jaw in closed position adjustable between 0-10 mm
  - Acid proofed stainless steel with blasted surface for a better grip
- ✓ Lower jaw: Lifting according to the device for up and down movements
  - No sliding of the sample during mastication due to the design of the jaw and due to separate nets between the jaws
  - Metal in contact with lower jaw tempered by the circulated water
  - Acid proofed stainless steel with blasted surface for a better grip
  - Can be easily removed for cleaning or changing. We recommend cleaning or changing the jaw after each test run
- ✓ Device for movements: Vertical pneumatic cylinder, compressed air 6-8 bar, compressed air supplied by the customer*
  - Movement frequency adjustable between 20 - 60 cycles per minute
- ✓ Temperature controlled water bath can be regulated between 25 – 45 °C.
  - One water bath for up to 6 test cells, volume 25 litres, made of PMMA acrylic glass.
  - Electronic pump for continuous circulation of the heated water.
- ✓ Mobile carrier for easy transport of the whole equipment. Two level carrier with rubber wheels. Made of aluminium
- ✓ Electronic control of each test cell individually
- ✓ Control of movement frequencies, operation time, temperature and warming up period, no product memory, parallel and serial interface available currently
- ✓ Power 230 VAC, 50/60Hz, 1000 VA (W)

Special models with logging of pressure, torque, pH and temperature are available.
Customized models equipped for extra hard gums or with extended volume for sparingly soluble substances etc are available on request.

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DRT 1 with 1 test station

230V/50Hz	12-091-0001
230V/60Hz	12-091-0002
115V/60Hz	12-091-0003
127V/60Hz	12-091-0004

DRT 2 with 2 test stations

230V/50Hz	12-092-0001
230V/60Hz	12-092-0002
115V/60Hz	12-092-0003
127V/60Hz	12-092-0004

DRT 3 with 3 test stations

230V/50Hz	12-093-0001
230V/60Hz	12-093-0002
115V/60Hz	12-093-0003
127V/60Hz	12-093-0004

DRT 4 with 4 test stations

230V/50Hz	12-094-0001
230V/60Hz	12-094-0002
115V/60Hz	12-094-0003
127V/60Hz	12-094-0004

DRT 5 with 5 test stations

230V/50Hz	12-095-0001
230V/60Hz	12-095-0002
115V/60Hz	12-095-0003
127V/60Hz	12-095-0004

DRT 6 with 6 test stations

230V/50Hz	12-096-0001
230V/60Hz	12-096-0002
115V/60Hz	12-096-0003
127V/60Hz	12-096-0004

Options for DRT

- 1000 pcs. Nets, extra 82-090-0003
- 100 pcs. 50 upper and 50 lower test jaws 82-090-0001
- Cuvette, extra 82-090-0010
- Cuvette, straight 82-090-0009
- Compressor Type Fini

230V/50Hz	82-090-0011
230V/60Hz	82-090-0012
115V/60Hz	82-090-0013
127V/60Hz	82-090-0014

- Compressor, Type Jun-Air, 32 l.

230V/50Hz	82-090-0021
230V/60Hz	82-090-0022
115V/60Hz	82-090-0023
127V/60Hz	82-090-0024

- Compressor, Type Jun-Air, 64 l.

230V/50Hz	82-090-0031
230V/60Hz	82-090-0032
115V/60Hz	82-090-0033
127V/60Hz	82-090-0034

- Blasting cleaning qualification (each pair) 82-090-0002
- Spare Part Kit consists of extra cuvette and o-rings, a pair of blank upper jaws and tools. 91-090-0000
- IQ / OQ document 66-090-9999
- Qualification tool kit 66-090-0000
- Jaw setting gauge 82-090-0004

Automatic Blasting Station

Measures: approx 0.6 x 0.8 m, height 0.6 m.

Demands on supply:
compressed air 6-8 bar, 100 litres/min at 6 bar,
compressor, reservoir of 50-100 litres.
Power supply 100-240 VAC, 50/60 Hz, less than 1 A. Blaster sand: Aluminium dioxide 0.2 – 0.4 mm, 1.5 kg per batch of 18 pair of jaws.

The Automatic Blasting Station needs a ventilating hood or exhaust for dust that is formed during the blasting procedure. Small amounts of blaster sand may fall on the floor during the filling procedure. The station should not be placed in the analytical lab.

Instruments for thickness measurements and surface roughness are needed to control the jaws and to qualify them before use.

230V/50Hz	72-090-0001
230V/60Hz	72-090-0002
115V/60Hz	72-090-0003
127V/60Hz	72-090-0004

Semi-Automatic Cleaning Station

Measures:
Cylindric drum with a diameter of approx 0.6 m, height 0,3 m. A crank and gearbox is connected to the side of the drum.

Demands on supply:
The cleaning station is for manual operation in a ventilated hood or cupboard (basket funnel).
Acetone: 2 litres water free Acetone from a normal freezer is used at - 20 °C for each batch of 18 pair of jaws. The Acetone may be reused many times.

An ultrasonic water bath is needed for final cleaning with deionised water and Acetone (Pro Analysi) after the blasting procedure.

72-091-0001

Detergents Tester (Tergotometer)

ERWEKA RT 700

Detergents Tester RT 700 is versatile laboratory test equipment with which the washing process of a common washing machine / dishwasher can be simulated, in order to determine different quality parameters of cleaning agents (tabs).
The RT 700 is equipped with 7 test stations with 1.000 ml or 2.000 ml glass vessels and a further station into which the supply of the immersion cooler is integrated. The glass vessels are integrated into a water bath, which can be heated depending upon test requirements up to 45°C or cooled down to 10°C. The regulation of the temperature takes place via the combination of a flow heater and a cooler. If the immersion cooler is not needed, it can be removed. Thereby an eighth test station becomes free.
Each of the 7 test stations allows paddles to simulate the agitating movement of a washing machine/dishwasher. The unit can be driven with up to 300 min^{-1}. The direction of rotation can be changed after a freely adjustable break, and thus the washing process is simulated optimally.
Using the adjustable test parameters of the RT 700 such as temperature, rate of motion and duration of the test, most different test standards currently used by manufacturers of cleaning agents and dishwashers can be tested. In each test the structure of the cleaning solution, degree of water hardness, pH value, chloride, etc., can be varied.

- ✓ RT 700-1000/HH with 1.000 ml Vessels
- ✓ RT 700-2000/HH with 2.000 ml Vessels
- ✓ 6 (DT 706) or 7 (DT 707) test stations
- ✓ “OQ Traffic Light” for temperature, Qualification-, Calibration and Service Intervals (standard). RPM and height (optional)
- ✓ Calibration Interval Display
- ✓ Qualification Interval Display
- ✓ Service Interval Display
- ✓ Online System Suitability Test Menu and protocol
- ✓ Moulded 1-piece PET water bath (only 1.000 ml version)
- ✓ External immersion thermometer
- ✓ Acrylic Glass Water Bath (only 2.000 ml version)
- ✓ External Flow-Through Thermostat, accuracy +/- 0.2°C
- ✓ PT 100 electronic temperature sensor (one-point calibration), cooling/heating of the Water Bath between 10-45°C
- ✓ Agitation Speed up to 300 min^{-1}
- ✓ Direction of rotation alterable can be changed after a freely adjustable break
- ✓ Self-Centering Vessels
- ✓ USP stainless steel Shaft and Paddles or Baskets
- ✓ Wobble < 0.2 mm
- ✓ Vibrations < 0.1 mils
- ✓ Teflon Coated Vessel Support Plate
- ✓ 80 Digit 4-line LC Display, illuminated
- ✓ Numeric Membrane Keypad with additional Function Keys
- ✓ Acoustic and Optic Manual Sampling Reminder
- ✓ Test-Run Duration Count-Up or Count-Down
- ✓ Serial RS 232 Interface
- ✓ Parallel Printer Port

ERWEKA RT 706 HH/1.000 ml	
230V/50Hz	11-077-6001
230V/60Hz	11-077-6002
115V/60Hz	11-077-6003
127V/60Hz	11-077-6004
ERWEKA RT 706 HH/2.000 ml	
230V/50Hz	11-177-6001
230V/60Hz	11-177-6002
115V/60Hz	11-177-6003
127V/60Hz	11-177-6004
ERWEKA RT 707 HH/1.000 ml	
230V/50Hz	11-077-7001
230V/60Hz	11-077-7002
115V/60Hz	11-077-7003
127V/60Hz	11-077-7004
ERWEKA RT 707 HH/2.000 ml	
230V/50Hz	11-177-7001
230V/60Hz	11-177-7002
115V/60Hz	11-177-7003
127V/60Hz	11-177-7004

Options

- Cooling Device Type FT 200 (control of the cooling device is done by the ERWEKA DH 2000 Thermostat) 11-x77-x1xx
- Modifications to accept speed of max. 300 rpm, clockwise and anti-clockwise directions with pause time, pre-selectable 11-x77-xx1x

Disintegration Testers

ERWEKA ZT 120 Series

The basic ERWEKA disintegration tester is represented by the ZT 120 series, available with 1, 2, 3 or 4 simultaneously operating USP/EP/JP compliant test stations. Lift in and lift out of the baskets is performed manually. Test time and nominal bath temperature is entered via the membrane keys, current test time as well as actual water temperature are shown on clearly visible red LEDs.
On request, an alarm may be selected to sound upon completion of the preset test time.
Heating of the warming solution in the moulded 1-piece PET water bath is performed by an integrated flow-through heating system.

- ✓ 1 to 4 test racks
- ✓ 30 ± 1 strokes/min.
- ✓ 55 ± 2 mm stroke height
- ✓ Manual lift out

1 Test Station, Type ZT 121

230V/50Hz	12-241-0001
230V/60Hz	12-241-0002
115V/60Hz	12-241-0003
127V/60Hz	12-241-0004

2 Test Stations, Type ZT 122

230V/50Hz	12-242-0001
230V/60Hz	12-242-0002
115V/60Hz	12-242-0003
127V/60Hz	12-242-0004

3 Test Stations, Type ZT 123

230V/50Hz	12-243-0001
230V/60Hz	12-243-0002
115V/60Hz	12-243-0003
127V/60Hz	12-243-0004

4 Test Stations, Type ZT 124

230V/50Hz	12-244-0001
230V/60Hz	12-244-0002
115V/60Hz	12-244-0003
127V/60Hz	12-244-0004

Options

- Basket Cleaning and Media Preheat Station (ZT 121/123 only) 11-25x-x1xx
- USP compliant “Quick-Clean” Basket Rack Assembly instead standard version. The “Quick-Clean” Baskets allows cleaning of the test stations from Tablet leftovers without the need of disassembling tools.82-24x-0006
- Basket Rack Assembly, Type “B”, with 3 test-stations 82-240-0011
- Basket Rack Assembly, Type “B”, with 3 test-stations in “Quick-Clean” Version 82-240-0016
- Immersion thermometer 70-001-0003
- Immersion Thermometer, certified Version 75-001-0003

- Water Stabiliser with colour indicator, 1 bottle 80-080-0002
- Spare part kit for ERWEKA ZT 120 Series 92-240-0000
- Spare Part Kit for standard basket rack 92-240-0001
- Spare Part Kit for Quick Clean basket rack 92-240-0002
- IQ/OQ/PQ documents for ZT 120/220/ 320 Disintegration Tester 65-2x0-9999

ERWEKA ZT 220 Series

In contrast to the ZT 120 series, on the ZT 220 series (available 1 to 4 test stations, operating simultaneously) the counting of the elapsed test duration is automatically started/ stopped when the arm with the basket is lowered/raised manually.

- ✓ 1 to 4 test racks
- ✓ 30 ± 1 strokes/min.
- ✓ 55 ± 2 mm stroke height
- ✓ Function keys and 2x LE display for entering nominal bath temperature and required run-time
- ✓ Starts/stops to count run-time automatically when basket rack is lowered
- ✓ Optional acoustic alarm on the completion of the pre-set run-time
- ✓ Manual lift-in and -out of the Baskets

1 Test Station, Type ZT 221

230V/50Hz	12-251-0001
230V/60Hz	12-251-0002
115V/60Hz	12-251-0003
127V/60Hz	12-251-0004

2 Test Stations, Type ZT 222

230V/50Hz	12-252-0001
230V/60Hz	12-252-0002
115V/60Hz	12-252-0003
127V/60Hz	12-252-0004

3 Test Stations, Type ZT 223

230V/50Hz	12-253-0001
230V/60Hz	12-253-0002
115V/60Hz	12-253-0003
127V/60Hz	12-253-0004

4 Test Stations, Type ZT 224

230V/50Hz	12-254-0001
230V/60Hz	12-254-0002
115V/60Hz	12-254-0003
127V/60Hz	12-254-0004

Options

- Basket Cleaning and Media Preheat Station (ZT 221/223 only) 12-25x-x1xx

- USP compliant “Quick-Clean” Basket Rack Assembly instead standard version. The “Quick-Clean” Baskets allows cleaning of the test stations from Tablet leftovers without the need of disassembling tools 82-241-0006
- Basket Rack Assembly, Type “B”, with 3 test-stations 82-240-0011
- Basket Rack Assembly, Type “B”, with 3 test-stations in “Quick-Clean” Version 82-240-0016

- Water Stabiliser with colour indicator, 1 bottle 80-080-0002
- Immersion thermometer 70-001-0003
- Immersion thermometer in certified version with certificate 75-001-0003
- Spare part kit for ERWEKA ZT 220 Series 92-250-0000
- Spare Part Kit for basket rack 92-240-0001
- Spare Part Kit for Quick Clean basket rack 92-240-0002
- IQ/OQ/PQ documents for ZT 120/220/ 320 Disintegration Tester 65-2x0-9999

Special Versions

Disintegration Tester for testing the disintegration time of detergents. 70 ± 1 strokes/min. Delivery without disintegration baskets 12-251-1xxx

ERWEKA ZT 320 Series

The ERWEKA ZT 320 Series offers individual operation of each test station. Each test-station comes with its own function keypad and LE display/s for individual programming of the test-run time.
In standard configuration each test station offers manual (optional automatic) lift-in and out of the basket rack assembly on start/ completion of the pre-set run-time. An alarm can be selected to be reminded. The actual bath temperature is measured by an external electronic PT 100 temperature sensor.
ZT 320 series disintegration testers (with optional automatic lift-in/-out) at any time can be upgraded for one, multiple or all test-stations.

- ✓ 1 to 4 test racks
- ✓ 30 ± 1 strokes/min.
- ✓ 55 ± 2 mm stroke height
- ✓ LE display/s to show remaining run-time and actual bath temperature
- ✓ Optional automatic lift-in and -out of the Basket Racks
- ✓ Integrated flow-through heating system (accuracy ± 0.2°C)
- ✓ RS 232 interface

1 Test Station, Type ZT 321

230V/50Hz	12-231-0001
230V/60Hz	12-231-0002
115V/60Hz	12-231-0003
127V/60Hz	12-231-0004

Automatic Lift-In and Out for ZT 321
12-231-1xxx

2 Test Stations, Type ZT 322

230V/50Hz	12-232-0001
230V/60Hz	12-232-0002
115V/60Hz	12-232-0003
127V/60Hz	12-232-0004

Automatic Lift-In and Out for ZT 322
12-232-1xxx

3 Test Stations, Type ZT 323

230V/50Hz	12-233-0001
230V/60Hz	12-233-0002
115V/60Hz	12-233-0003
127V/60Hz	12-233-0004

Automatic Lift-In and Out for ZT 323
12-233-1xxx

4 Test Stations, Type ZT 324

230V/50Hz	12-234-0001
230V/60Hz	12-234-0002
115V/60Hz	12-234-0003
127V/60Hz	12-234-0004

Automatic Lift-In and Out for ZT 324
12-234-1xxx

Options

- Automated lift-In and -out of the Basket Rack Assembly/-ies on start/completion of the pre-set run-time of each test station. This option guarantees that the disintegration of the samples cannot go on when the pre-set run-time is completed

-
  Quick-Clean-Basket (100% USP/EP/JP compliant) for fast cleaning of the test stations. No tools required for disassembly and assembly. 82-231-0006

- Basket cleaning and media preheat station (ZT 321/323 only) 11-23x-x1xx

- Basket Rack Assembly, Type “B”, with 3 test-stations 82-240-0011

- Basket Rack Assembly, Type “B”, with 3 test-stations in “Quick-Clean” version 82-240-0016

- Water Stabiliser with colour indicator, 1 bottle 80-080-0002

- USB Printer interface 12-23x-xx1x

- IQ/OQ/PQ documents for ZT 120/220/ 320 Disintegration Tester 65-2x0-9999

Spares

- Spare Part Kit for ERWEKA ZT 320 Series 92-230-0000

- Spare Part Kit for basket rack 92-240-0001

- Spare Part Kit for Quick Clean basket rack 92-240-0002

- Spare Set (6) of glass tubes for Basket Type A, standard 92-240-0061

- Spare Set (3) of glass tubes for Basket Type B, standard 92-240-0031

- Spare Set (6) of disks for Basket Type A, standard 92-240-0062

- Spare Set (3) of disks for Basket Type B 92-240-0032

Upgrade

- Graphical display of the disintegration process of each individual sample.

  This addition to the ZT.net software allows not only to determine the actual disintegration time but to show the size reduction of the sample over the disintegration time.

  Therefore this feature gives unique additional value to the normal disintegration test since variations between the samples – which later will have influence in the dissolution result – can be determined and reported. 50-271-0001

- Computer package comprising of brand name PC, min. 17” TFT monitor, keypad, mouse and colour printer; ZT.net software pre-installed 50-270-0002

ERWEKA ZTm 320 Series

The automated ZTm 320 disintegration tester series is based on the manual ZT 320 series available with optional basket lift out feature; but is also upgradable by one or more basket rack assemblies with automated detection, controlled then via PC and the CFR 21/11 compliant ZT.net software package.

The ZTm allows the choice of manual and automated test stations by mBasket (magnetic guided disc and sieves both USP/EP compliant and sensors underneath the sieves) in type “A” (6 test-stations) or type “B” (3 larger test stations) configuration.

The mBasket doesn’t need any modification for measuring fully disintegrating and nonfully disintegrating products such as film coated tablets, gelatine capsules etc. The generated results are then stored via the ZT.net software package (SQL server data base) and can be statistically processed and printed at any time.

- ✓ 1 to 4 test racks
- ✓ 30 ± 1 strokes/min.
- ✓ 55 ± 2 mm stroke height
- ✓ LE display/s to show remaining run-time and actual bath temperature
- ✓ Optional automatic lift-in and -out of the Basket Racks
- ✓ Integrated flow-through heating system (accuracy ± 0.2°C)
- ✓ RS 232 interface

1 Test Station, Type ZTm 321	13-231-0000
2 Test Stations, Type ZTm 322	13-232-0000
3 Test Stations, Type ZTm 323	13-233-0000
4 Test Stations, Type ZTm 324	13-234-0000

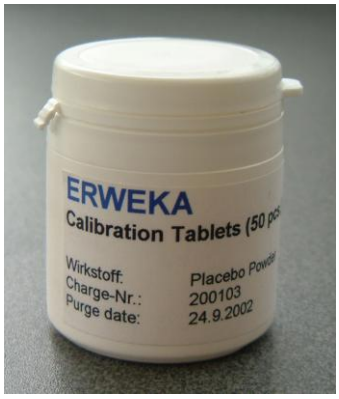
Options

- mBasket type B instead of type A 82-231-0000
- mBasket type B (3 test-stations) 82-231-3000
- Disc Remover (“Spider-Arm”) for type A 80-270-0001
- Computer package; incl. colour printer 50-271-0002
- Notebook, incl. TFT monitor, keypad, mouse and color printer - as well as software installation and test-run 50-271-0004

Spares

- Spare-Part-Kit for mBasket (glass tubes, sieves and guides discs) 90-270-0002
- Spare mBasket type A (6 test-stations) 82-231-6000

ERWEKA PQ Tablets



1 Bottle (50) of ERWEKA PQ Tablets with specified disintegration time to check the performance of the unit, complete with certificate.
66-666-6665

Qualification tools for Disintegration Testers

60-240-0000
Qualification tool kit for ZT 120, ZT 220 and ZT 320 Series comprising of stop watch and st.steel ruler

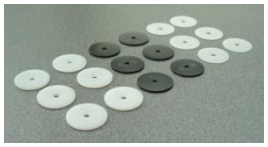
65-240-0000
Qualification tool kit for ZT 120, ZT 220 and ZT 320 Series comprising of stop watch and st.steel ruler with all tools in certified version

90-240-0003
Stop watch for control of strokes/min.

95-240-0003
Stop watch for control of strokes/min., certified

90-240-0004
St.steel ruler for control of stroke height

95-240-0004
St.steel ruler for control of stroke height, numbered with certificate



95-270-0005
Set of 18 Distance Plates: 0.6, 1.0 and 1.5 mm (6 plates per size), certified

62-000-0006
Distance plates of sizes 0.6mm, 1.0mm and 1.5 mm (set of 9 with 3 plates per size) for special test basket (EP Application "B")

Tablet Friability-/ Abrasion Testers

ERWEKA TA Series

Tablet Friability-/-Abrasion Testers of the TA Series comply 100% with all USP/EP requirements. The drum is turned at 25 ± 1 rpm, the run-time can be adjusted by membrane function keys in either time or turnings. The remaining run-time as well as the actual rpm are shown at 2 LE displays.
According to the latest specifications the unit is equipped with one additional switching leg to bring the drum to the 10° position.
The optional USB interface allows you to either download the test parameters (time, actual/ nominal speed) to a PC or receive hard-copy printout when an optional printer is connected.

- ✓ 25 rpm
- ✓ Available for 1, 2 or 4 drums
- ✓ Compatible for ERWEKA friability- and abrasion drums
- ✓ DC frequency motor with constant actual/ nominal adjustment
- ✓ Built-in timer
- ✓ Function membrane keys
- ✓ 2x LE display
- ✓ Switching leg for 10° adjustment

TA 120 (for one drum, left)
100-240V/50-60Hz 12-310-0000

TA 220 (for two drums, left and right)
100-240V/50-60Hz 12-320-0000

Spare Part Kit (for TA 120/220 only)
92-310-0000

TA 420 (for two double drums)
100-240V/50-60Hz 14-340-0000

Spare Part Kit incl. 1 drum 92-340-0000

ERWEKA TAR Series

Tablet Friability-/-Abrasion Tester with adjustable speed (20-100 rpm) and easy tablet insert. On completion of the test run, the samples are automatically removed from the drum.
Speed and run-time may be pre-set via the membrane function keys. Nominal and actual speed as well as remaining run-time is shown on the LE displays.
According to the latest specifications the unit is equipped with one additional switching leg to bring the drum to the 10° position for testing of bigger sized samples.
The optional USB interface allows you either to download the test parameters (time, actual/ nominal speed) to a PC or receive a hard-copy printout when an optional printer is connected.

- ✓ 20 – 100 rpm
- ✓ Available for 1 or 2 drums
- ✓ Compatible with ERWEKA friability- and abrasion drums
- ✓ DC frequency motor with constant actual/ nominal adjustment for adjustable speed
- ✓ Built in timer
- ✓ Membrane function keys for pre-selection of the test run-time in either number of turns or time and rotation speed
- ✓ 2x LE display
- ✓ Switching leg for 10° adjustment

TAR 120 (for one drum, left)
100-240V/50-60Hz 12-315-0000

TAR 220 (for two drums, left and right)
100-240V/50-60Hz 12-325-0000

Spare Part Kit incl. 1 drum for TAR 120/220 only
92-315-0000

TAR 420 (for two double drums)
100-240V/50-60Hz 12-345-0000

Options for TA/TAR

- ⏩ USB interface 82-249-0000

ERWEKA TDR 100

The ERWEKA TDR 100 has been designed to offer even more comfort as well as documentation. The TDR 100 is equipped with an interface to connect either Mettler AB 54 or Sartorius CP 64 balances. The test procedure is completely menu guided and test run parameters such as rpm, weight before and after the test as well as lost in percent is displayed (when a balance is connected). To print out the documentation and results a printer can be connected to the printer interface.

- ✓ One friability drum included in the delivery range
- ✓ Easy load and automatic emptying of drum (friability drum only)
- ✓ Compatible for ERWEKA friability- and abrasion drums
- ✓ DC frequency motor with constant actual/ nominal adjustment for adjustable speed
- ✓ Adjustable speed from 20 to 100 rpm
- ✓ Built in timer
- ✓ Numeric touch sensitive keys for pre-selection of the test run-time in either number of turns or time
- ✓ Illuminated 4-line LC display
- ✓ Printer interface for documentation of date, time, test run parameters and results by a connected printer
- ✓ RS 232 serial interface for external control and data transfer
- ✓ Interface to connect Mettler or Sartorius balance
- ✓ Sample collection container

100–240V/50Hz and 60Hz 11-330-0001

Balances for Connection to TDR

- Sartorius CPA 64
  0.1 to 60.0 g, accuracy ± 0.1 mg. including wind guard, integrated calibration weight, RS 232 interface and interface cable to ERWEKA TDR 70-330-0001

- Sartorius CPA 64 OCE
  Same as above, but gaugeable
  75-330-0001

- Mettler AB 54
  0.1 to 50.0 g, accuracy ± 0.1 mg. including wind guard, calibration weight, RS 232 interface and interface cable to ERWEKA TDR 70-330-0002

Options for TDR

- Friability Drum with certificate
  11-330-1xxx

- Printer for documentation
  71-249-0000

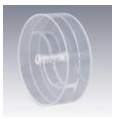
Friability Drums

Friability Drum, left for TA 120/220 (not for automatic emptying) 11-3x0-1xxx

Friability Drum, left for TA 120/220, numbered with certificate of compliance (not for automatic emptying) 11-3x0-2xxx

Friability Drum, right for TA 220 (not for automatic emptying)1 1-320-x1xx

Friability Drum, right for TA 220, numbered with certificate of compliance (not for automatic emptying) 11-320-x2xx

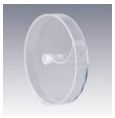


Double Friability Drum, left for TA 420, (not for automatic emptying) 11-340-1xxx

Double Friability Drum, left for TA 420, numbered with certificate of compliance (not for automatic emptying) 11-340-2xxx

Double Friability Drum, right for TA 420, (not for automatic emptying) 11-340-x1xx

Double Friability Drum, right for TA 420, numbered with certificate of compliance (not for automatic emptying) 11-340-x2xx



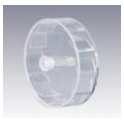
Friability Drum, left for TAR 120/220, with opening for automatic emptying 11-3x5-1xxx

Friability Drum, left for TAR 120/220, numbered with certificate of compliance, with opening for automatic emptying 11-3x5-2xxx

Friability Drum, right for TAR 220 with opening for automatic emptying 11-325-x1xx

Friability Drum, right for TAR 220, numbered with certificate of compliance with opening for automatic emptying 11-325-x2xx

Abrasion Drums

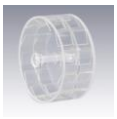


Abrasion Drum, left for TA 120/220 (not for automatic empt.) 11-3x0-3xxx

Abrasion Drum, left for TA 120/220, numbered with certificate of compliance (not for automatic emptying) 11-3x0-4xxx

Abrasion Drum, right for TA 220 (not for automatic emptying) 11-320-x3xx

Abrasion Drum, right for TA 220, numbered with certificate of compliance (not for automatic emptying) 11-320-x4xx



Double Abrasion Drum, left for TA 420, (not for auto. empt.) 11-340-3xxx

Double Abrasion Drum, left for TA 420, numbered with certificate of compliance (not for automatic emptying) 11-340-4xxx

Double Abrasion Drum, right for TA 420, (not for automatic emptying) 11-340-x3xx

Double Abrasion Drum, right for TA 420, numbered with certificate of compliance (not for automatic emptying) 11-340-x4xx

Abrasion Drum, left for TAR 120/220, (not for automatic emptying) 11-3x5-3xxx

Abrasion Drum, left for TAR 120/220, numbered with certificate of compliance, (not for automatic emptying) 11-3x5-4xxx

Abrasion Drum, right for TAR 220 (not for automatic emptying) 11-325-x3xx

Abrasion Drum, right for TAR 220, numbered with certificate of compliance (not for automatic emptying) 11-325-x4xx

IQ/OQ/PQ documents for Friability-Abrasion Testers

66-310-9999 IQ/OQ/PQ documents for ERWEKA TA/TAR/TDR 100 series

IQ/OQ/PQ tools for Tablet Friability-/ -Abrasion Testers

60-310-0000
Qualification tool kit for TA, TAR and TDR Series, including of stop watch, electronic rpm measuring tool and reflector plates (35)

65-310-0000
Qualification tool kit for TA, TAR and TDR Series, certified

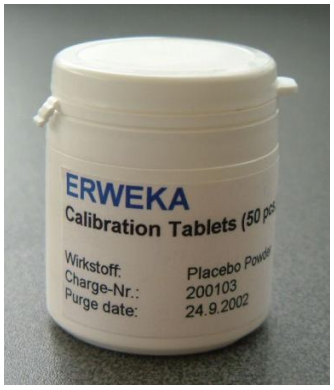
90-240-0003
Stop watch for control of run-time

95-240-0003
Stop watch for control of run-time, certified

70-310-0000
Electronic RPM measurement unit, contactless; including reflector marks (35)

75-310-0000
Electronic RPM measurement unit, contactless, calibrated with certificate; including reflector marks (35)

ERWEKA PQ Tablets



1 Bottle (75) of ERWEKA PQ Tablets with specified friability loss to check the performance of the unit, complete with certificate.

66-666-6666

ERWEKA GTA 120

ERWEKA friability tester type GTA 120 designed for any form of tablets, granules and pellets according to the Pharm. Eur. Excellent reproducibility is possible due to the precise constancy of the input energy and due to the irrelevance of the tackiness of the test material inside the glass bottle (test station).
The single glass bottle is fixed to a holder which is connected to an arm performing the shaking (oscillation) procedure as described in the Pharm.Eur. An acrylic glass lid covers the testing area. The shaking intensity and duration are manually pre-selected.

- ✓ Shaking frequency 0-400 strokes/min.
- ✓ Run time 0-9999 seconds.
- ✓ Shaking angle 42°.
- ✓ Test station complies with the regulations
- ✓ Security acrylic glass cover over the test station

100–240V/50Hz and 60Hz 12-311-0001

- Additional Test-Bottle 81-311-0001

- IQ/OQ/PQ document for GTA 120 friability tester 66-311-9999

Operation procedure according Pharm. Eur. Vol.17, No.3, July 2005:

a.) Before and after measurement the graules/pellets have to be sieved through a 355 sieve to remove any fines.
b.) 10.00 g of the sieved granules/pellets have to be filled into the glass bottle, then the bottle is capped and fixed to the holder.
c.) The test run has to be performed as mentioned before.
d.) The bottle is removed, opened and the granules/pellets are again sieved through a 355 sieve in order to remove the fines.
e.) The weight of the sieved granules/pellets is measured again
f.) The friability loss is calculated: $\frac{m1 - m2}{m1} \times 100$
g.) This procedure (a - f) has to be repeated 3 times, then the average friability loss is calculated.

Tablet Hardness Testers

ERWEKA TBH 125

The TBH 125 is a basic dual-mode (“Constant Speed” and “Constant Force”) tablet hardness tester for those customers requiring accuracy and robust design but very basic functions only.
The TBH 125 is operated via a symbol keypad which allows entering the number of samples required for testing.
Results of sample hardness as well as sample diameter (optional) are shown at the two bright LED displays and can be printed (incl. date/time) via the standard USB printer interface.
Calibration is menu-guided and includes a calibration print-out (3-value linearity check) with date and time of performance as well as unit serial number.
Even at the TBH 125 the integrated menu allows to set the measurement mode incl. breaking speed-/force increase rate, time/date, sensitivity of the hardness measurement and a break between the tests to remove dust and debris.

- ✓ Up to 99 samples per test
- ✓ Electronic load-cell
- ✓ Tests samples up to 28 mm diameter
- ✓ Measuring range 10 – 300 N; Optional 10 – 500 N
- ✓ Accuracy ± 1N
- ✓ Adjustable break between the samples
- ✓ Two measuring principles
- ✓ Integrated programme menu for calibration of the unit with documentation print out
- ✓ USB Printer interface for documentation of time, date, results and statistics

100-240V/50 and 60Hz 12-421-1000

Options

- Diameter measurement; up to 28.00 mm; resolution 0.01 mm; accuracy +/- 0.03 mm 12-422-1000
- Thickness measurement; up to 28.00 mm; resolution 0.01 mm; accuracy +/- 0.03 mm 12-422-1100
- Integrated Printer for results, statistics and calibration protocol 12-42x-xx1x
- Extended measuring range; 10 – 500 N 12-42x-1001
- Spare part kit for ERWEKA TBH 125 92-421-0000
- Integrated Printer for results, statistics and calibration protocol 12-42x-xx1x
- Collection container with splash guard 80-421-0000

For Qualification (IQ/OQ) handbooks and Qualification/Calibration tools please see “Qualification of tablet hardness testers”

ERWEKA TBH 225

The new TBH 225 series is the basic hardness tester developed for those customers who require robust design, easy handling and fast Qualification without fulfilling 21 CFR 11 regulations. Since the samples are inserted into the test station manually all kind and shapes of samples can be tested.
The unit is handled by a block of numeric membrane keys and the menu displayed at the illuminated full graphic LC display (240x64 dots). Calibration is completely menu guided and may be performed by either weight stones or the electronic ERWEKA AutoCal System. Via a standard USB printer interface a standard or laser printer (types on request) can be connected to receive hardcopy documentation.
The LAN/USB interface allows connecting a computer with the optional MC.net software for external control. In combination with this, the TBH 225 series is 100% 21 CFR 11 compliant.

- ✓ Up to 99 samples per test
- ✓ Electronic load-cell
- ✓ Tests samples up to 28 mm diameter
- ✓ Measuring range 10 – 500 N
- ✓ Accuracy ± 1N
- ✓ Adjustable break between the samples
- ✓ Two measuring principles available as standard
- ✓ “Turbo” hardness test jaw, 3 times faster than previous version
- ✓ Integrated programme menu for calibration of the unit with documentation print out
- ✓ LAN/USB interface for external control and storage of results by the optional MC.net software
- ✓ USB interface for USB memory stick standard
- ✓ SD – Card Slot standard
- ✓ USB Printer interface for documentation of time, date, results and statistics

100-240V/50 and 60Hz 13-425-0000

ERWEKA TBH 225 D

Similar to the TBH 225, the ERWEKA TBH 225 D offers the possibility to measure with the “constant speed” and “constant force” hardness testing principle. The required measurement principle may be selected by the programme menu within seconds.
In addition to the basic TBH 225 the TBH 225 D measures and documents the sample diameter/length. This also allows documenting that the sample was placed in the correct alignment for the hardness testing process.

- ✓ Measuring range for diameter:
  up to 28.00 mm (D/28 Version)
  or optional
  up to 70.00 mm (D/70 Version)
- ✓ Accuracy ± 1 N; ± 0.03 mm
- ✓ Values in mm or inch

100-240V/50 and 60Hz 13-xx6-0xxx

ERWEKA TBH 225 TD

Similar to the TBH 225 the ERWEKA TBH 225 TD offers the possibility to measure with the “constant speed” and “constant force” hardness testing principles. The programme menu may select the required measurement principle within seconds.
The TBH 225 TD in addition offers automatic measurement of sample diameter/length and semi-automatic measurement of sample thickness. The units’ electronics are linked to a digital thickness measuring device under which the sample is placed before testing hardness and diameter/length. The thickness measuring gauge is lowered manually and the displayed result is transferred to create either a 3 parameter print-out or to transfer the data to a PC with the optional MC.net software.
It is possible to select results in N, KP and SC as well as mm and inch.

Additional features:

- ✓ Measuring range for diameter: up to 28.00 mm (D/28 Version)
- ✓ Measuring range for thickness: up to 12.00 mm (T/12 Version) or optional up to 22.00 mm (T/22 Version)
- ✓ Accuracy ± 1 N; ± 0.03 mm
- ✓ Values in mm or inch

100-240V/50 and 60Hz 13-xx7-0xxx

ERWEKA TBH 225 WTD

Semi-automated ERWEKA combination tester for testing the 4 essential parameters of round and odd shaped samples (weight, thickness, diameter and hardness). The TBH 225 WTD is based on the TBH 225 TD and offers the same functions (“constant speed” and “constant force” measurement principle etc.).
In addition an external Sartorius or Mettler analytical balance with windshield (20.0 mg to 50.0000 g; accuracy ± 0.1 mg, Sartorius balance with in-built calibration weight) may be connected to the unit. Before testing the other parameters, the sample is placed manually to the balance; the weight is determined and transferred to the units’ electronics.

Standard delivery range without balance; different brands and types of balances optionally available.

Additional features:

- ✓ Measuring range for diameter: up to 28.00 mm
- ✓ Measuring range for thickness: up to 12.00 mm
- ✓ Measuring range for weight (dependant on Type of balance): 20.0mg – 50.0000g
- ✓ Accuracy ± 1N; ± 0.03 mm; ± 0.1 mg
- ✓ Values in mm or inch, mg or g

100-240V/50 and 60 Hz W-/S 13-xx8-0xx5

Options

- Sartorius CPA 64 balance incl. windshield and integrated calibration weight for connection with TBH 225 WTD 13-xx8-0xx6

- Sartorius CPA 64 OCE balance (gaugeable) incl. windshield and integrated calibration weight for connection with TBH 225 WTD 13-xx8-0xx7

- Mettler AB 54 balance incl. windshield for connection with TBH 225 WTD 13-xx8-0xx8

- Extended Measuring Range, 3 - 1.000 N 12-44x-x1xx

- Set of test jaws for testing of sugar coatings 80-430-0001

- Test Jaws for Oblong Shaped Tablets 80-430-0002

- Measuring range for diameter: up to 70.00 mm (D/70 Version) 13-xx6-1xxx

- AutoPosition tool not only aligns convex shaped oblongs, additionally it moves the tablets against the end point! Therefore the risk of wrong measurement results by either inaccurate manual positioning or turning of the samples is dramatically lowered.
  For testing of standard samples a standard test-station, without rollers, is implemented.
  Switching between the 2 different test-stations is performed within seconds (no tools required) 12-xxx-xx1x

- Spare part kit for ERWEKA TBH 225 91-425-0000

For Qualification (IQ/OQ) documents and Qualification/Calibration tools please see "Qualification of tablet hardness testers"

Software

ERWEKA MC.net Software

The ERWEKA MC.net software is directly connected with the serial LAN interface of the TBH x25 and therefore allows PC operated external control of the Hardness-/Combination Tester as well as online storage of user management, product data, results as well as CFR 21/11 compliant Audit Trail.

Due to the high memory capacity of the PC the capacity of stored users, product data, results as well as CFR 21/11 Audit Trail is nearly unlimited.

Tolerances for test-results can be individually set or automatically set according to USP or Pharm.Eur.

An optional alarm function creates stop of the unit and alarm in case a sample is out of the set pass/fail tolerance. In this case the user may check why the measured result is out of the pass/fail limit.

The CFR 21/11 compliant user management allows individual definition of user groups, individual user rights for each group including additional rights for individual users etc. Since, due to CFR 21/11 users can not be deleted from the memory the MC.net software allows to switch users inactive and, on request, only to display active users.

Similar to users the MC.net software allows to switch product data inactive and, on request, only to display active product data.

The MC.net software is a tool to create various statistical reports from the test-results, such as test-run statistics, graphical batch statistics, trend analysis etc.

The integrated CFR 21/11 compliant Audit Trail tool of the MC.net software automatically stores all Audit Trail data of the connected unit. The Audit Trail data may be sorted according to date or user/user group, displayed and printed for hard-copy documentation.

50-420-0000

WIN.print Software

Print software for hard-copy documentation at any network printer when TBH is connected to the computer Network via the LAN connector.

50-431-0000

Special Versions

- Special version of ERWEKA TBH 225 for testing of compressed detergents (TABS)
  12-420-9xxx

AutoCal 2.0 (Dynamic Calibration)

- The new AutoCal 2.0 System is an automated calibration tool for calibration of the hardness test station without weights and without the need of external PC and software. With the new AutoCal 2.0 the electronics-stick is plugged into the USB interface of the TBH x25 (previous series without USB interface require an adapter), the connected certified load-cell inserted into the hardness test station. The complete system (adjustment and calibration) is now performed via the keypad and display of the hardness tester, a report generated via the standard printer interface.
  The unit will automatically adjust; calibration can be checked by linearity checking of up to 50 points within the measuring range and documented by a connected printer.
  85-450-0000

- Adaptor for connecting the AutoCal electronics stick to previous TBH series without USB interface 85-410-0000

For Qualification (IQ/OQ) documents and Qualification/Calibration tools please see “Qualification of tablet hardness testers”.

ERWEKA TBH 225 “Industrial Version”

The stainless steel, dust-protected “Industrial Version” of the TBH 225 series was developed for those customers who require robust design, easy handling and fast Qualification without fulfilling 21 CFR 11 regulations. Since the samples are inserted into the test station manually all kind and shapes of samples can be tested.

The unit is handled by a block of numeric membrane keys and the menu displayed at the illuminated full graphic LC display (240x64 dots). Calibration is completely menu guided and may be performed by either weight stones or the electronic ERWEKA AutoCal System.

Via a standard USB printer interface a standard or laser printer (types on request) can be connected to receive hard copy documentation.

The serial LAN/USB interface allows connecting a computer with the optional MC.net software for external control. In combination with this the TBH 225 series is 100% 21 CFR 11 compliant.

- ✓ Stainless steel, dust-protected housing
- ✓ Up to 99 samples per test
- ✓ Electronic load-cell
- ✓ Tests samples up to 26/70 mm diameter
- ✓ Measuring range 10 – 500 N (optionally: 10 – 1000 N)
- ✓ Accuracy ± 1N
- ✓ Adjustable break between the samples
- ✓ “Turbo” hardness test jaw, 3 times faster than previous version
- ✓ Two measuring principles available as standard
- ✓ Integrated programme menu for calibration of the unit with documentation print out
- ✓ LAN/USB interface for external control and storage of results by the optional MC.net software
- ✓ USB interface for USB memory stick standard
- ✓ SD – Card Slot standard
- ✓ USB printer interface for documentation of time, date, results and statistics

100-240V/50 and 60Hz 13-424-0000

Options

- Diameter/length measurement for samples with a diameter/length of up to 28.00 mm (accuracy ± 0.03 mm), Version –D/28; 13-424-xx10
- Diameter/Length measurement for samples with a diameter/length of up to 70.00 mm (accuracy ± 0.03 mm), Version –D/70; 13-424-1xx0
- Hardness Tester with measuring range 10 – 1000 N 13-424-x1x0
- Set of test jaws for testing of sugar coatings 80-430-0001
- Test Jaws for Oblong Shaped Tablets 80-430-0002
- AutoPosition tool not only aligns convex shaped oblongs, additionally it moves the tablets against the end point! Therefore the risk of wrong measurement results by either inaccurate manual positioning or turning of the samples is dramatically lowered. For testing of standard samples a standard test-station, without rollers, is implemented. Switching between the 2 different test-stations is performed within seconds (no tools required) 12-xxx-xx1x
- WIN.print software (*see TBH 225*) 50-431-0000
- Spare part kit for ERWEKA TBH 225 92-424-0000

Other options from standard ERWEKA TBH 225 Series (thickness- and weight measurement, test-jaws etc.) are available on request.

For Qualification (IQ/OQ) documents and Qualification/Calibration tools please see “Qualification of tablet hardness testers”

ERWEKA TBH 325

The new TBH 325 series is the hardness tester with integrated product memory for up to 20 products developed for those customers who require robust design, easy handling and fast Qualification without complying 21 CFR 11 regulations.
Via the numeric membrane keypad with alpha-numeric sub function the nominal hardness in combination with 2 individual plus/minus tolerances and remarks may be stored for up to 20 different products and recalled for testing. Information such as product name and remarks can be entered similar to writing a message on a mobile phone. Stored product data can be transmitted via SD card or USB stick to other devices of the TBH 325/425 family. Since the samples are inserted into the test station manually all kind and shapes of samples can be tested. Calibration is completely menu guided and may be performed by either weight stones or the dynamic ERWEKA AutoCal System.
Via a standard USB printer interface a printer can be connected to receive hard copy documentation. The serial LAN/USB interface allows connecting a computer with the optional MC.net software for external control. In combination with this, the TBH 325 series is 100% 21 CFR 11 compliant.

- ✓ Up to 99 samples per test
- ✓ Electronic load-cell
- ✓ Tests samples up to 28 mm or 70 mm diameter
- ✓ Measuring range 10 – 500 N, accuracy ± 1N
- ✓ Adjustable break between the samples
- ✓ Two measuring principles available as standard
- ✓ “Turbo” hardness test jaw, 3 times faster than previous version
- ✓ Integrated programme menu for calibration of the unit with documentation print out
- ✓ LAN/USB interface for external control and storage of results by the optional MC.net software
- ✓ USB interface for USB stick standard
- ✓ SD – Card Slot standard
- ✓ USB Printer interface for documentation of time, date, results and statistics

100-240V/50 and 60Hz 13-435-0000

ERWEKA TBH 325 D

Similar to the TBH 325, the ERWEKA TBH 325 D offers the possibility to measure with the “constant speed” and “constant force” hardness testing principle. The required measurement principle may be selected by the programme menu within seconds.
In addition to the basic TBH 325 the TBH 325 D measures and documents the sample diameter/length. This also allows you to document that the sample was placed in the correct alignment for the hardness testing process.

Additional features:

- ✓ Measuring range for diameter:
  up to 28.00 mm (Version –D/28) or optional up to 70.00 mm (Version –D/70)
- ✓ Accuracy ± 1 N; ± 0.03 mm
- ✓ Values in mm or inch

100-240V/50 and 60Hz 13-xx6-0xxx

ERWEKA TBH 325 TD

Similar to the TBH 325 the ERWEKA TBH 325 TD offers the possibility to measure with the “constant speed” and “constant force” hardness testing principles. The programme menu may select the required measurement principle within seconds.
The TBH 325 TD in addition offers automatic measurement of sample diameter/length and semi-automatic measurement of sample thickness. The units’ electronics are linked to a digital thickness measuring device under which the sample is placed before testing hardness and diameter/length. The thickness measuring gauge is lowered manually and the displayed result is transferred to either create a 3 parameter print-out or transfer the data to a PC with the optional MC.net software.
It is possible to select results in N, KP and SC as well as mm and inch.

Additional features:

- ✓ Measuring range for diameter: up to 26.00 mm
- ✓ Measuring range for thickness: up to 12.00 mm
- ✓ Accuracy ± 1 N; ± 0.03 mm
- ✓ Values in mm or inch

100-240V/50 and 60Hz 13-xx7-0xxx

ERWEKA TBH 325 WTD

Semi-automated ERWEKA combination tester for testing the 4 essential parameters of round and odd shaped samples (weight, thickness, diameter and hardness). The TBH 325 WTD is based on the TBH 325 TD and offers the same functions (“constant speed” and “constant force” measurement principle etc.).
In addition an external Sartorius or Mettler analytical balance with windshield (20.0 mg to 50.0000 g; accuracy ± 0.1 mg, Sartorius balance with in-built calibration weight) is connected to the unit. Before testing the other parameters, the sample is placed manually to the balance; the weight is determined and transferred to the units’ electronics.

Standard delivery range without balance; different brands and types of balances optionally available.

Additional features:

- ✓ Measuring range for diameter: up to 28.00 mm
- ✓ Measuring range for thickness: up to 12.00 mm
- ✓ Measuring range for weight (dependant on balance): 20.0 mg – 50.0000 g
- ✓ Accuracy ± 1N; ± 0.03 mm; ± 0.1 mg
- ✓ Values in mm or inch, mg or g

100-240V/50 and 60Hz 13-xx8-0xx5

Options

- Sartorius CPA 64 balance incl. windshield and integrated calibration weight for connection with TBH 325 WTD 13-438-0006

- Sartorius CPA 64 OCE balance (gaugeable) incl. windshield and integrated calibration weight for connection with TBH 325 WTD 13-438-0007

- Mettler AB 54 balance incl. windshield for connection with TBH 325 WTD 13-xx8-0xx8

- Standard data export via LAN/USB interface 82-44x-0002

- Extended measuring range, 3 – 1.000 N, accuracy ± 1N 12-xxx-x1xx

- Enlarged of product memory from standard 20 products to up to 50 products 82-4x0-0000

- Set of test jaws for testing sugar coatings 80-430-0001

- Set of test jaws for testing oblong shaped samples 80-430-0002

- Measuring range for diameter: up to 70.00 mm (Version –D/70) 13-xx6-1xxx

- AutoPosition tool not only aligns convex shaped oblongs, additionally it moves the tablets against the end point! Therefore the risk of wrong measurement results by either inaccurate manual positioning or turning of the samples is dramatically lowered.
  For testing of standard samples a standard test-station, without rollers, is implemented.
  Switching between the 2 different test-stations is performed within seconds (no tools required) 12-xxx-xx1x

- Spare part kit for ERWEKA TBH 325 91-435-0000

For Qualification (IQ/OQ) documents and Qualification/Calibration tools please see "Qualification of tablet hardness testers"

AutoCal 2.0 (Dynamic Calibration)

- The new AutoCal 2.0 System is an automated calibration tool for calibration of the hardness test station without weights and without the need of external PC and software. With the new AutoCal 2.0 the electronics-stick is plugged into the USB interface of the TBH x25 (previous series without USB interface require an adapter), the connected certified load-cell inserted into the hardness test station. The complete system (adjustment and calibration) is now performed via the keypad and display of the hardness tester, a report generated via the standard printer interface.
  The unit will automatically adjust; calibration can be checked by linearity checking of up to 50 points within the measuring range and documented by a connected printer. 85-450-0000

- Adaptor for connecting the AutoCal electronics stick to previous TBH series without USB interface 85-410-0000

Software Packages

ERWEKA MC.net Software

The ERWEKA MC.net software is directly connected with the serial LAN/USB interface of the TBH x25 and therefore allows PC operated external control of the Hardness-/Combination Tester as well as online storage of user management, product data, results as well as CFR 21/11 compliant Audit Trail.

Due to the high memory capacity of a PC the capacity of stored users, product data, results as well as CFR 21/11 Audit Trail is nearly unlimited.

Tolerances for test-results can be individually set or automatically set according to USP or Pharm.Eur.

An optional alarm-function creates stop of the unit and alarm in case a sample is out of the set pass/fail tolerance. In this case the user may check why the measured result is out of the pass/fail limit.

The CFR 21/11 compliant user management allows individual definition of user groups, individual user rights for each group including additional rights for individual users etc. Since, due to CFR 21/11 users can not be deleted from the memory the MC.net software allows to switch users inactive and, on request, only to display active users.

Similar to users the MC.net software allows to switch product data inactive and, on request, only to display active product data.

The MC.net software is a tool to create various statistical reports from the test-results, such as test-run statistics, graphical batch statistics, trend analysis etc.

The integrated LAN/USB compliant Audit Trail tool of the MC.net software automatically stores all Audit Trail data of the connected unit.
The Audit Trail data may be sorted according to date or user/user group, displayed and printed for hard-copy documentation.

50-420-0000

WIN.print software

Print software for hard-copy documentation at any network printer when TBH is connected to the computer Network via the optional Ethernet (LAN) adapter

50-431-0000

ERWEKA TBH 425

Hardness Tester for automatic measurement of up to 10 samples. Via the numeric membrane keypad with alpha-numeric sub function the nominal hardness in combination with 2 individual plus/minus tolerances (T2 = pass/fail criteria) and remarks may be stored for up to 20 different products and recalled for testing. Information such as product name and remarks can be entered similar to writing a message on a mobile phone. Stored product data can be transmitted via SD card or USB stick to other devices of the TBH 325/425 family. Calibration is completely menu guided and may be performed by either weight stones or the electronic ERWEKA AutoCal System. Via a standard USB printer interface a printer can be connected to receive hardcopy documentation.
The serial LAN/USB interface allows connecting a computer with the optional MC.net software for external control. In combination with this, the TBH 425 series is 100% 21 CFR 11 compliant.

- ✓ 10 chamber star feeder with brushes to clean the transport way
- ✓ Routine for alignment of oblong shaped samples
- ✓ Tests samples up to 28 mm diameter
- ✓ Measuring range 10 – 500 N, optional 10 – 1.000 N accuracy ± 1N
- ✓ Values in N, Kp or Sc
- ✓ “Turbo” hardness test jaw, 3 times faster than previous version
- ✓ Numeric keypad with alpha-numeric sub-function for entry of test parameters, product name, batch number and remarks
- ✓ Integrated menu for calibration and adjustment with documentation print out
- ✓ LAN/USB interface for external control and storage of results by the optional MC.net software
- ✓ USB interface for USB stick standard
- ✓ SD-Card Slot standard
- ✓ USB printer interface for documentation of time, date, results and statistics

100V-240V/50Hz and 60Hz 13-445-1000

ERWEKA TBH 425 D

ERWEKA TBH 425 D is based on the TBH 425 but in addition offers measurement and documentation of the sample diameter/length.
This function allows verifying that the sample was perfectly aligned before testing hardness.

Additional features:

- ✓ Measuring range for diameter: up to 28.00 mm
- ✓ Accuracy ± 1 N; ± 0.03 mm
- ✓ Values in mm or inch

100V-240V/50Hz and 60Hz 13-xx6-xxxx

ERWEKA TBH 425 TD

The semi-automated TBH 425 TD in addition to the standard TBH 425 offers automatic measurement of sample diameter/length and thickness by a motor-driven and calibratable electronic linear potentiometer. The unit can either fulfil a 3 parameter hard-copy print-out by a connected printer (optional) or transfer the data to a PC with the optional MC.net software.

Additional features:

- ✓ Automatic measurement of hardness, thickness and diameter/length
- ✓ Measuring range for thickness: up to 10.00 mm
- ✓ Accuracy ± 1 N; ± 0.03 mm
- ✓ Values in mm or inch

100V-240V/50Hz and 60Hz 13-xx7-xxxx

ERWEKA TBH 425 WTD

The ERWEKA TBH 425 WTD is based on the TBH 425 TD.
In addition an external Sartorius or Mettler analytical balance with windshield (20.0 mg to 50.0000 g; accuracy ± 0.1 mg; Sartorius balance with in-built calibration weight) may be connected to the unit. Before testing the other parameters, the sample is placed manually onto the balance, the weight is determined and transferred to the units' electronics.

Standard delivery range without balance; different brands and types of balances optionally available.

Additional features:

- ✓ Measuring range for weight (dependant on balance): 20.0 mg – 50.0000 g
- ✓ Accuracy ± 1N; ± 0.03 mm; ± 0.1 mg
- ✓ Values in mm or inch, mg or g

100V-240V/50Hz and 60Hz 13-xx8-xxx5

Options

- Sartorius CPA 64 balance incl. windshield and integrated calibration weight for connection with TBH 425 WTD
  13-xx8-0xx6
- Sartorius CPA 64 OCE balance (gaugeable) incl. windshield and integrated calibration weight for connection with TBH 425 WTD
  13-xx8-0xx7
- Mettler AB 54 balance incl. windshield for connection with TBH 425 WTD
  13-xx8-0xx8
- Standard data export via LAN/USB interface
  82-44x-0002
- Groove in the hardness test station for better alignment of oblong shaped samples
  12-44x-1xxx
- Stainless steel magazine plate
  12-44x-xxx1
- Extended measuring range, 10 – 1.000 N, accuracy ± 1N
  12-44x-x1xx
- Increase of product memory from standard 20 products to up to 50 products
  82-4x0-0000
-
  Set of test jaws for testing of sugar coatings
  80-430-0001
-
  Set of test jaws for testing oblong shaped samples
  80-430-0002

AutoCal 2.0 (Dynamic Calibration)

- The new AutoCal 2.0 System is an automated calibration tool for calibration of the hardness test station without weights and without the need of external PC and software. With the new AutoCal 2.0 the electronics-stick is plugged into the USB interface of the TBH x25 (previous series without USB interface require an adapter), the connected certified load-cell inserted into the hardness test station. The complete system (adjustment and calibration) is now performed via the keypad and display of the hardness tester, a report generated via the standard printer interface.
  The unit will automatically adjust; calibration can be checked by linearity checking of up to 50 points within the measuring range and documented by a connected printer.
  85-450-0000
- Adaptor for connecting the AutoCal electronics stick to previous TBH series without USB interface
  85-410-0000
- Spare part kit for ERWEKA TBH 425
  92-450-0000

Special Versions

12-44x-xx1x	Special version of ERWEKA TBH 425 with 20 chambers, st.steel feeder and transportway for testing fertilisers.
12-44x-xx2x	Special version of ERWEKA TBH 425 with 30 chambers, st.steel feeder and transportway, including readjustment of moveable jaws, calibration adjustment and software modification.

For Qualification (IQ/OQ) documents and Qualification/Calibration tools please see “Qualification of tablet hardness testers”.

ERWEKA TBH 525

Semi automated tablet combination tester for measuring up to 5 parameters (weight, thickness, width, diameter/length and hardness) of round and oblong shaped samples.

The TBH 525, in standard configuration, comes with a 20 position magazine to hold samples up to maximum diameter/length of 26 mm. The integrated menu allows setting an individual number of tablets to test for each parameter, e.g. 20 for weight, 15 for thickness, 10 for width, diameter/length and hardness.

By an integrated load cell the TBH 525 WTD measures the weight with a tolerance of ± 0.1 mg. The test station is designed in such way that always the complete sample will lay on the weight measurement plate.

Thickness measurement is performed by a device which assures that a minimum of weight/force is introduced to the sample to guarantee precise measurement even of soft and elastic tablets.

The hardness test station is equipped with a unique roller-alignment-system:

1. The sample is inserted into the test station in such way that the width is measured by the test-jaw
2. The roller system will then turn the oblong so the length and hardness can be correctly measured
3. After measurement the rollers will move back so the broken sample, together with the dust and debris, is rejected

The design of the test jaw allows that even small samples in combination with the roller system can be precisely measured for hardness.

Via the numeric membrane keypad with alpha-numeric sub function the nominal hardness in combination with 2 individual plus/minus tolerances (T2 = pass/fail criteria) and remarks may be stored for up to 20 (optional 50) different products and recalled for testing. Information such as product name and remarks can be entered similar to writing a message on a mobile phone.

Stored product data can be transmitted via SD card or USB stick to other devices of the TBH 325/425 family.

Cleaning of the unit is fast and easy: the magazine is to be removed so the complete transport way with all test stations to offer easy access to the transport way and all test station for manual cleaning.

Calibration is completely menu guided and may be performed by either weight stones or the electronic ERWEKA AutoCal 2.0 System.

Via a standard USB interface a printer can be connected to receive hardcopy documentation. Alternatively the TBH 525, similar to TBH 225/325/425, via LAN interface, can be integrated into computer network to allow hard copy documentation at a central network printer (Win.print software required).

The serial LAN/USB interface allows connecting a computer with the optional MC.net software for external control. In combination with this, the TBH 525 series is 100% 21 CFR 11 compliant.

- ✓ 20 chamber star feeder
- ✓ integrated weighing system
- ✓ low weight precision thickness measurement device
- ✓ Unique roller alignment system to position oblong shaped samples
- ✓ Tests samples up to 26 mm diameter
- ✓ Measuring range 3 – 400 N, optional 3 – 800 N accuracy ± 1N
- ✓ Values in N, Kp or Sc / mm or inches / g or mg
- ✓ Numeric keypad with alpha-numeric sub-function for entry of test parameters, product name, batch number and remarks
- ✓ Integrated menu for calibration and adjustment with documentation print out
- ✓ LAN/USB interface for external control and storage of results by the optional MC.net software
- ✓ USB interface for USB stick standard
- ✓ SD-Card Slot standard
- ✓ USB printer interface for documentation of time, date, results and statistics

100V-240V/50Hz and 60Hz 14-445-0000

Options

- Diameter/Width Measurement (measuring range 0.10 to 26.00 mm with an accuracy of +/- 0.03 mm) 14-xx6-xxxx
- Thickness Measurement (measuring range 0.10 to 12.00 mm with an accuracy of +/- 0.03 mm) 14-xx7-xxxx
- Weight Measurement, integrated, incl. Sartorius weighing cell 14-xx8-xxx5
- Extended Measuring Range, 800 N 12-45x-x1xx
- Increase of product memory from standard 20 products up to 50 products 82-4x0-0000
- Spare Part Kit for TBH 525 92-450-0000

Software Packages

- **ERWEKA MC.net Software**

  ERWEKA MC.net software is directly connected via the serial interface with TBH x25 and therefore allows PC operated external control of the Hardness-/Combination Tester as well as online storage of user management, product data, results as well as CFR 21/11 compliant Audit Trail.

  Due to the high memory capacity of a PC the capacity of stored users, product data, results as well as CFR 21/11 Audit Trail is nearly unlimited.

  Tolerances for test-results can be individually set or automatically set according to USP or Pharm.Eur.

  An optional alarm-function creates stop of the unit and alarm in case a sample is out of the set pass/fail tolerance. In this case the user may check why the measured result is out of the pass/fail limit.

  The CFR 21/11 compliant user management allows individual definition of user groups, individual user rights for each group including additional rights for individual users etc. Since, due to CFR 21/11 users can not be deleted from the memory the MC.net software allows to switch users inactive and, on request, only to display active users.

  Similar to users the MC.net software allows to switch product data inactive and, on request, only to display active product data.

  The MC.net software is a tool to create various statistical reports from the test-results, such as test-run statistics, graphical batch statistics, trend analysis etc.

  The integrated CFR 21/11 compliant Audit Trail tool of the MC.net software automatically stores all Audit Trail data of the connected unit.
  The Audit Trail data may be sorted according to date or user/user group, displayed and printed for hard-copy documentation.
  50-420-0000

- **WIN.print Software**

  Print software for hard-copy documentation at any network printer when TBH is connected to the computer Network via the LAN connector 50-431-0000

For Qualification (IQ/OQ/PQ) documents and Qualification/Calibration tools please see “Qualification of tablet hardness testers”.

ERWEKA MultiCheck 5.1

The ERWEKA MultiCheck 5.1 is a universal testing device for fully automatic measurement of sample weight, thickness, diameter/length and hardness.

The advanced design of the unit, beginning even from the outside, shows the innovative functions such as switchable hardness testing principle ("Constant-Speed" and "Constant-Force"), fully automatic speed adjustment of tablet singulation and transport, independent of sample size and surface, advanced high-accuracy thickness measuring system and state-of-the-art alignment tool for irregular shaped oblongs and coated tablets.

The new MultiCheck 5.1. comes with a system for separation of the samples via an oscillating funnel. This system eliminates the need of vibrator strength adjustment as previously necessary for the other MultiCheck versions.

In standard configuration the MultiCheck 5.1 offers an integrated Sartorius weighing cell (accuracy +/- 0.1 mg). On request the new unit is also available with Sartorius CPA 64 (with integrated display) or CPA 64 OCE (gaugeable version with integrated display, accuracy +/- 0.01 mg).

Further the MultiCheck 5.1 can be fitted with an overworked alignment flap, a tool which allows aligning and holding oblongs in the correct position for and while breaking. At the version 5.1 the alignment flap (down-holder) is modernized in such a way that now it creates more force to hold the samples while the breaking process.

The MultiCheck 5.1 in combination with the ERWEKA TabSelect flap/switch and the Venturi air transport system can be connected to any single or double sided tablet press.

Function:
The samples are individualised automatically by a new system for separation of the samples via an oscillating funnel and then deposited onto the weight measurement boat. From there the samples are transported to the test stations by a linear feeder which allows alignment of oblongs as well as odd shaped samples such as sugar coatings. In case of problematic samples a down holder in the hardness test station is available as an option. A patented step in the transport way allows you to switch tablets which tend to lie on the side.

The unit is controlled by an optional external PC.

Software Package MC.net (included):
ERWEKA MC.net software is directly connected via Ethernet network connection with the MultiCheck 5.1. The Software allows PC operated external control of the Hardness-/Combination Tester as well as online storage of user management, product data, results as well as CFR 21/11 compliant Audit Trail.

Due to the high memory capacity of a PC the capacity of stored users, product data, results as well as CFR 21/11 Audit Trail is nearly unlimited.

Tolerances for test-results can be individually set or automatically set according to USP or Pharm.Eur.

An optional alarm-function creates stop of the unit and alarm in case a sample is out of the set pass/fail tolerance. In this case the user may check why the measured result is out of the pass/fail limit.

The CFR 21/11 compliant user management allows individual definition of user groups, individual user rights for each group including additional rights for individual users etc.

Similar to users the MC.net software allows to switch product data inactive and, on request, only to display active product data. The MC.net software is a tool to create various statistical reports from the test-results, such as test-run statistics, graphical batch statistics, trend analysis etc.

The integrated CFR 21/11 compliant Audit Trail tool of the MC.net software automatically stores all Audit Trail data of the connected unit.

The Audit Trail data may be sorted according to date or user/user group, displayed and printed for hardcopy documentation.

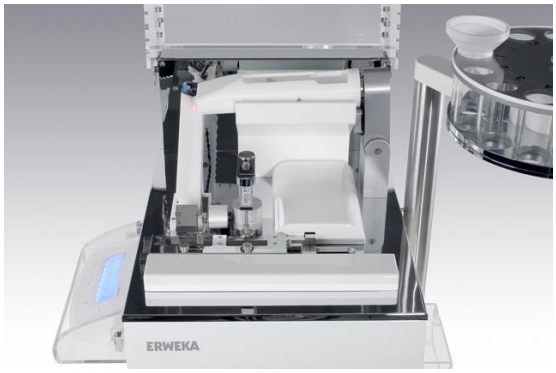
Important Information

- The area in front of the hardness and under the width measurement station should be always dust-free and free of damage. We recommend scheduled service (approximately every 300 operating hours) from an ERWEKA service engineer or qualified personnel

- We recommend pre-adjustment with PQ tablets in our service department

- The option width measurement should be always offered with the option down holder

- Extended measuring range up to 35mm in combination with width measurement is available on request



- ✓ Singulation of samples via an oscillating funnel
- ✓ Possibility of optical length and width measurement of oblong shaped samples measured within the hardness test station. Utilizing a laser the width is automatically an accuracy of +/- 0.1 mm prior to length and hardness measurement. The results are then displayed, stored and documented.
- ✓ Fully automatic measurement of weight, hardness, thickness and diameter/length of round and oddly shaped samples
- ✓ Optional batch feeding magazine with 12-chambers for up to 100 samples/ chamber
- ✓ Weight measurement boat to eliminate the problems caused by dust and debris
- ✓ Linear transport of the samples to align oblongs
- ✓ Automatic cleaning of transport way and test jaw
- ✓ Optional down holder for alignment of problematic samples
- ✓ Test samples up to 26 mm diameter, optional up to 35 mm
- ✓ Measuring range 3 – 500 N, optional 3 – 1.000 N, thickness up to 12.0 mm
- ✓ Accuracy ± 1N, ± 0.03 mm and ± 0.1 mg
- ✓ In combination with the Sartorius weighing cell the MultiCheck 5.1 offers an accuracy of +/- 0.1mg, in combination with the CPA 64 OCE (gaugeable) the accuracy is even 10 times higher (+/- 0.01mg)
- ✓ Ethernet network connection of the unit

<u>Price includes:</u>
1. MultiCheck 5.1 as described
2. Software package MC.net

!!! Excluding PC !!!

- MultiCheck 5.1 (manual operation of hood) - Fully automated measurement of weight, hardness, thickness and diameter / length of round and oddly shaped samples, including Sartorius weighing cell and MC.net Software.

100V-240V/50Hz and 60Hz 14-455-0000

- MultiCheck 5.1 (manual operation of hood) - Fully automated measurement of weight, hardness, thickness and diameter / length of round and oddly shaped samples. Sartorius weighing cell. Incl. 12 chamber batch feeding magazine for up to 100 samples per chamber and MC.net software.

100V-240V/50Hz and 60Hz 14-456-0000

Options

- Down Holder for alignment of difficult to position samples including one universal down holding tool for oblong shaped tablets.
  80-455-0000
- Electronically adjustable step before the thickness measurement station to drop samples to the right side 2x-45x-xx1x
-
  Housing made of stainless steel
  82-455-0001

  Picture shows MultiCheck V
- Additional price Sartoruis Balance with display instead Sartorius weighing cell
  82-455-9001
- Additional price gaugeable balance, type Sartorius CPA 64 OCE instead of standard weighing cell 82-455-9000
- Extended measuring range of up to 35mm diameter 1x-45x-1xxx
- Width Measurement for oblongs (up to 10mm; accuracy: +/- 0,1mm)
  82-455-0002
- Capsule system (weight determination)
  1x-45x-xxx1
- Measurement of capsule length (optical)
  1x-45x-2xxx
- Extended measuring range (3-1.000 N) with ± 1N accuracy; test-speed up to 2.30 mm/sec. 1x-45x-x1xx
- ERWEKA MC.net Software for the external control of the MC 5.1 system and the online storage of user management data, measuring results as well as CFR21/11 compliant audit trail data 50-420-0000
- PC in ERWEKA standard configuration (brand name PC in minitower housing, CPU Intel Pentium Dual Core 2 Duo with minimum 2.6GHz, Hard disk with minimum 250 GB, Main Memory with minimum 2048 MB, 3 serial interfaces, 6 USB 2.0 interfaces, 16x DVD-ROM device, Windows XP, keyboard, scroll mouse and 19" flat screen TFT monitor) 80-430-0009
- Spare Part Kit for MultiCheck 5.1, including fuses, initiator, toothed belt and reflex button
  94-070-0001

AutoCal 2.0 (Dynamic Calibration)

- The new AutoCal 2.0 System is an automated calibration tool for calibration of the hardness test station without weights and without the need of external PC and software. With the new AutoCal 2.0 the electronics-stick is plugged into the USB interface of the TBH x25 (previous series without USB interface require an adapter), the connected certified load-cell inserted into the hardness test station. The complete system (adjustment and calibration) is now performed via the keypad and display of the hardness tester, a report generated via the standard printer interface.
  The unit will automatically adjust; calibration can be checked by linearity checking of up to 50 points within the measuring range and documented by a connected printer.
  85-450-0000
- AutoCal re-calibration with calibration certificate 36-441-0010

Tablet Press Connection

82-455-0001 TabSelect (for the connection of tablet press with MC 5.1)

80-455-0002 Venturi Transport System, VTS-1, with interface

80-455-0003 AutoDoc Control Software package, instead MC.net software

IQ/OQ/PQ documents for Tablet Hardness Testers

63-425-9999 IQ/OQ/PQ documents for ERWEKA TBH 225/325/425/ 525 series in English language

83-425-9999 IQ/OQ/PQ documents for ERWEKA TBH 255/355/455/ 525 series in another language

67-455-9999 IQ/OQ/PQ documents for ERWEKA MultiCheck 5.1 and MC.net software

IQ/OQ/PQ tools for Tablet Hardness Testers

80-440-0002
Qualification Tablets for MultiCheck, plastics

85-440-0002
Qualification Tablets for MultiCheck, plastic, numbered with certificate

80-440-0003
Qualification tablets for MultiCheck, st.steel

85-440-0003
Qualification tablets for MultiCheck, st.steel, laser numbered with certificate

Calibration/Qualification tools for diameter and thickness measuring station

80-421-0010
1.0 mm block, st.steel

85-421-0010
1.0 mm block, st.steel with certificate

80-421-0030
3.0 mm block, st.steel

85-421-0030
3.0 mm block, st.steel with certificate

80-421-0050
5.0 mm block, st.steel

85-421-0050
5.0 mm block, st.steel with certificate

80-421-0100
10.0 mm block, st.steel

85-421-0100
10.0 mm block, st.steel with certificate

Calibration/Qualification tools for weight measuring station

85-423-0050
Calibration weight 50.0 g, class F1, calibrated with certificate

85-423-0100
100 mg weight, Class F1, calibrated with certificate

85-423-0500
500 mg weight, class F1, calibrated with certificate

85-423-0001
1.0 g weight, class F1, calibrated with certificate

Hardness Test Station Static Calibration Tools

80-420-0500
Calibration weight, 5.0 kg, class M3

85-420-0500
Calibration weight, 5.0 kg, class M1, calibrated with certificate

80-420-1000
Calibration weight, 10.0 kg, class M3

85-420-1000
Calibration weight, 10.0 kg, class M1, calibrated with certificate

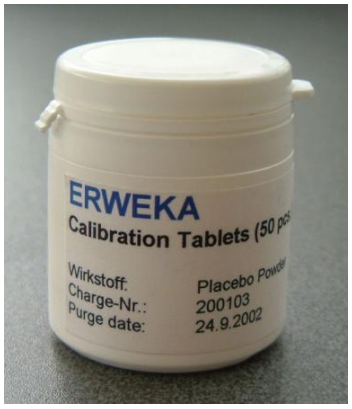
80-420-2000
Calibration weight, 20.0 kg, class M3

85-420-2000
Calibration weight, 20.0 kg, class M1, calibrated with certificate

Hardness Test Station, Dynamic Calibration Tool

- The new AutoCal 2.0 System is an automated calibration tool for calibration of the hardness test station without weights. With an upgraded load cell, now a calibration of a Hardness Tester without interface box is possible. The load cell is connected directly to the device via USB-stick, therefore eliminating connection to a PC. For older models of the TBH x10 series an adapter is available. To simplify the input of the alpha numeric data, now an external IBM keypad can be connected to the TBH 325/425 for entering the master product data, batch numbers etc.
  The unit will automatically adjust; calibration can be checked by linearity checking of up to 50 points within the measuring range and documented by a connected printer. Including Windows based Calibration Software

ERWEKA PQ Tablets

- 

  1 Bottle (75) of ERWEKA PQ Tablets with specified weight, hardness, diameter and thickness to check the performance of the unit, complete with documentation.
  66-666-6666

Modular Check Weighing Systems

ERWEKA CWS

The ERWEKA CWS acts as the base of all ERWEKA Check Weighing Systems.
Up to 50 samples can be loaded. The unit will automatically individualise the samples and transport them to the balance boat. The weight is determined by a Sartorius CPA 64 balance. When the weight is stable, the sam-ple will be transported into a container.
The unit is operated by an alpha-numeric touch-sensitive keypad and a full-graphic backlit LC display. Results can be displayed, hard copied via the parallel printer port or be transferred to a computer by the standard RS 232 serial interface.

- ✓ Weight measurement boat to eliminate the problems caused by dust and debris
- ✓ Optional diversion unit according to products and/or tolerances
- ✓ Measuring range 20 mg to 20 g
- ✓ Throughput max. 20 samples/min. at accuracy +/- 0.5 mg (standard) or optional max. 12 samples/min. at accuracy +/- 0.1 mg (please specify)
- ✓ Product memory for up to 49 products to store nominal values, 3 tolerances and remarks under product name and -number
- ✓ Integrated programme menu for calibration of the unit with documentation print-out
- ✓ RS 232 and RS 485 serial interface for external control and storage of results by the optional ERWEKA CWS software
- ✓ Parallel printer interface for documenta-tion of time, date, results and statistics
- ✓ 50.0 g weight, class F1 for calibration of the weight measuring station

100-240V/50 and 60Hz 10-410-0000

Options for ERWEKA CWS

- Three diversion flaps to sort the samples of 1 batch according to the entered tolerances (pass/fail or up to 3 individual tolerances) 10-41x-1xxx
- CWS Check Weighing System with 10 chamber storage magazine for 10 batches of up to 100 samples per chamber or 1 batch of up to 1.000 samples (10x100), including upgraded programme menu 10-411-0000
- CWS Check Weighing System with 10 chamber diversion system to sort the tested samples according to the chambers of the storage magazine (including 10 chamber storage magazine, 10-411-xxxx, not available with diversion flap 10-41x-1xxx and 10-412-0000) 10-411-0001
- CWS Check Weighing System with 10x2 chamber diversion system to sort the tested samples according to the chambers of the storage magazine and individual pass/fail criteria (including 10 chamber storage magazine, 10-411-1xxx and diversion flaps 10-411-0000) 10-412-0000

- CWS Check Weighing System with Storage and individualising container for up to 10.000 samples. 10-415-0000
- Ethernet (LAN) Network Connection adapter 80-430-0003
- USB printer interface adapter for standard parallel printer port (PCL) 80-270-0000

Software

- ERWEKA CFR 21/11 compliant MC.net Windows based Software for external control and to store the results of the tests as well as batch comparison and to lay down product data incl. tolerances 50-410-0000

IQ/OQ/PQ Documents for Check Weighing System, Type CWS

66-410-9999 IQ/OQ/PQ documents for ERWEKA CWS

Calibration/Qualification tools for weight measuring station

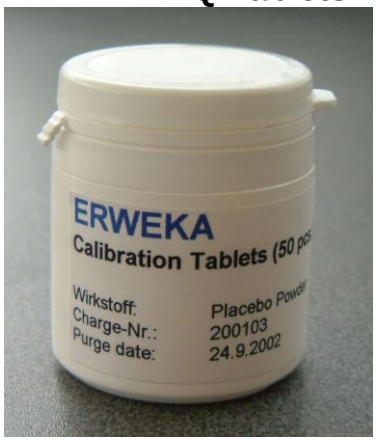
85-423-0050
Calibration weight 50.0 g, class F1, calibrated with certificate

85-423-0100
100 mg weight, class F1, calibrated with certificate

85-423-0500
500 mg weight, class F1, calibrated with certificate

85-423-0001
1.0 g weight, class F1, calibrated with certificate

ERWEKA PQ Tablets



1 Bottle (75) of ERWEKA PQ tablets with specified weight to check the performance of the unit, complete with documentation

66-666-6666

Powder and Granulate Testers – Bulk Density

ERWEKA GTL

The ERWEKA GTL is the basic ERWEKA unit for testing the flow characteristics of powders and granulates. It is equipped with an exchangeable stainless steel hopper (200 ml) with exchangeable outlet nozzle (3 sizes of nozzles standard: 10.0, 15.0 and 25.0 mm; 3 different sizes optional). The pre-weighed sample is filled into the hopper and a light sensor located under the outlet of the hopper measures the flow time.
When determination of flow time of the sample volume is requested, two additional stainless steel hoppers with different volumes are available as an option.
The unit is controlled via the numeric membrane keypad, results are shown by the illuminated 4-line LC display.

100-240V/50-60 Hz 11-450-0000

Options

- Set of 3 outlet nozzles with outlet diameter 6.0, 8.0 and 11.3 mm, stainless steel
  80-450-0003
-
  Stainless steel hopper, 480 ml volume
  80-450-0480
- Stainless steel hopper, 100 ml volume
  80-450-0100

ERWEKA GT

The ERWEKA GT has been designed to offer either measurement of flow time according to specified amount (weight or volume) or amount (weight) according to specified time. It is equipped with an exchangeable stainless steel hopper (480 ml) and exchangeable out-let nozzle (3 sizes of nozzles standard: 10.0, 15.0 and 25.0 mm; 3 different sizes optional) as well as a balance located under the outlet of the hopper.
The product data is entered via the alphanumeric keypad, results are shown on the illuminated 320 digit full-graphic LC display and can be printed out using the standard parallel printer interface or transferred to a PC via the standard RS 232 interface.

100-240V/50-60 Hz 10-451-0000

Options

- When testing the characteristics of products with poor flow the unit can be equipped with a stirrer in the hopper 10-451-1xxx
-
  Set of 3 outlet nozzles with outlet diameter 6.0, 8.0 and 11.3 mm), stainless steel
  80-450-0003
- Stainless steel hopper, 100 ml volume
  80-450-0100
- Stainless steel hopper, 200 ml volume
  80-450-0200
- USB printer interface adapter for standard parallel printer port (PCL)
  80-270-0000
- Standard data export via RS232 interface for GT 82-44x-0001

ERWEKA GTB

The ERWEKA Flow ability Tester, Type GTB is based on the GT but also measures and documents the angle of repose optically (by laser).

100-240V/50-60 Hz 10-452-0000

- Spare Part Kit for GTB 92-457-0000

Options

- When testing the characteristics of powders or granulates with poor flow the ERWEKA GTB can be equipped with a stirrer in the hopper 10-452-1xxx
- Set of 3 outlet nozzles with outlet diameter 6.0, 8.0 and 11.3 mm, stainless steel 80-450-0003
- Stainless steel hopper, 100 ml volume 80-450-0100
- Stainless steel hopper, 200 ml volume 80-450-0200
- USB printer interface adapter for standard parallel printer port (PCL) 80-270-0000
- Standard data export via RS232 interface for GTB 82-44x-0001

ERWEKA SMG

The manual ERWEKA SMG is the unit for the reproducible determination of apparent (bulk) density which can be used with all free flowing powders or granules. According to DIN ISO 697 and DIN 53 466, the apparent density is determined by measuring the mass of powder in a receiver of known dimension after filling from a funnel of a specified shape under specified conditions. Within the scope of supply are the apparatus SMG 697 or SMG 53466, operating instructions and a calibration certificate.

	SMG 53 466	*SMG 697*
✓ Height:	205 mm	280 mm
✓ Width :	156 mm	210 mm
✓ Depth:	156 mm	147 mm
✓ Weight:	4.6 kg	7,5 kg
✓ Material:	1.4305/1.4571	1.4305/1.4571
✓ Receiver:	100 ml	500 ml
	71-455-2001	71-455-1001

IQ/OQ/PQ documents for Granulate-Flow Testers

66-450-9999 IQ/OQ/PQ documents for ERWEKA GTL; GT; GTB

Qualification tools for GT/B Series

60-451-9999
Qualification tool kit for GTL (including stop watch)

66-451-9999
Qualification Tool Kit for GT comprising of stop watch and weights for balance

66-452-9999
Qualification Tool Kit for GTB comprising of 66-451-9999 plus special cones for laser Qualification

85-451-0000
Calibration weights (2x 2.0 kg) for readjustment of the integrated balance (GT and GTB only)

Powder & Granulate Testers – Tapped Density

ERWEKA SVM 121 and 221

The ERWEKA SVM 121 (one test station) and SVM 221 (two test stations) meet the specifications of USP apparatus 1 (stroke height 15 mm, 300 strokes per minute tapped metal on metal). The test run duration can be adjusted either in time or strokes (up to 99.999) by membrane function keys. The remaining test run-time as well as actual stroke are shown on the illuminated 2 LE displays (the standard unit is delivered without glass-ware).

SVM 121 (one test station)

100-240V/50-60 Hz	12-453-1000

SVM 221 (two test stations)

100-240V/50-60 Hz	12-453-2000

ERWEKA SVM 122 and 222

ERWEKA Tapped Density Testers, Type SVM 122 and SVM 222 are equal to SVM 121 and 221 but designed to meet the specifications of USP apparatus 2, Phar.Eur. and DIN ISO EN 787, part 11 (stroke height 3.0 mm, 250 ± 15 strokes per minute).

SVM 122 (one test station)

230V/50Hz	12-454-1001
230V/60Hz	12-454-1002
115V/60Hz	12-454-1003
127V/60Hz	12-454-1004

SVM 222 (two test stations)

100-240V/50-60 Hz	12-454-2000

ERWEKA SVM 223
(only two test stations)

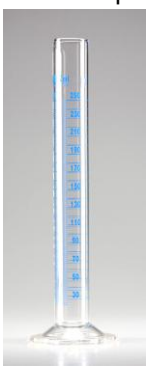
ERWEKA Tapped Density Testers, Type SVM 223 combines the two different specifications in only one unit. Test station 1 operates according to USP apparatus 1, test-station 2 at the same time according to USP apparatus 2/ EP/DIN ISO EN 787, part 11. The test run-time can be chosen only in time (not in strokes).

100-240V/50Hz 12-455-2000

- Spare Part Kit vor SVM 91-456-000

Glassware for SVM Series

All ERWEKA Glass Cylinders are with adaptor kit according to USP or EP



- Glass Cylinder, 100 ml
  80-453-0100
- Glass Cylinder, 250 ml
  80-453-0250
- Glass Cylinder, 500 ml including conversion plate for holder of SVM Series
  80-453-0500

IQ/OQ/PQ documents Tapped Density Testers

- IQ/OQ/PQ document for ERWEKA SVM
  66-453-9999

Qualification tool kits for SVM Series

- Qualification tool kit for ERWEKA SVM Series comprising of stroke height checker and digital stopwatch 60-453-0001
- Qualification tool kit for ERWEKA SVM Series comprising of stroke height checker and digital stop watch, certified 65-453-0001

Options

- USB printer interface adapter for standard parallel printer port (PCL) 80-270-0000

Suppository Testers

ERWEKA Suppository Hardness Tester, Type SBT 2

Suppository Hardness Tester comprising of an electrical heated chamber with a number of inserts to accept various size of suppositories. The hardness is checked by weights (included in the standard delivery range) which are added until the suppository collapses.

230V/50Hz	11-465-0001
230V/60Hz	11-465-0002
115V/60Hz	11-465-0003
127V/60Hz	11-465-0004

ERWEKA Suppository Melting Point Tester, Type SSP

The SSP consists of a graduated tube (test chamber). The sample to be tested is placed in a spiral shaped glass test basket inside the test chamber, which is surrounded by a water heating tube. For heating of the water inside the heating jacket, ERWEKA offers an optional Circulation Heater, Type EST 2.

SSP	10-466-0000

ERWEKA Circulation Heater, EST 2

230V/50Hz	10-466-5001
230V/60Hz	10-466-5002
115V/60Hz	10-466-5003
127V/60Hz	10-466-5004

ERWEKA Suppository Penetration Tester, Type PM 30

Suppositories must disintegrate, dissolve or melt at body temperature.

The ERWEKA PM 30 is designed to deliver reproducible results for softening time of suppositories.
The unit comprises of three glass test tubes each for 1g, an acrylic glass water bath and an immersion thermostat (1.500 Watts at 230V, 1.000 Watts at 115V, accuracy ± 0.5°C). The water bath temperature is displayed by an immersion thermometer.

PM 30 acc. to EP App. A

230V/50Hz	11-467-0001
230V/60Hz	11-467-0002
115V/60Hz	11-467-0003
127V/60Hz	11-467-0004

PM 30 ditto, but glass tubes acc. to EP App. B

230V/50Hz	11-468-0001
230V/60Hz	11-468-0002
115V/60Hz	11-468-0003
127V/60Hz	11-468-0004

Options for PM

- Glass test tubes, 2g, with adaptor, for PM 30 acc. to EP App. B 81-000-1001
- Glass test tubes, 3g, with adaptor, for PM 30 acc. to EP App. B 81-000-1002
- Immersion thermometer with certificate (instead of non-certificated immersion thermometer) 75-001-0003
- Water Stabiliser with colour indicator, 1 bottle for 2 fillings 80-080-0002
- Spare part kit for PM 30 acc. to EP App. B, comprising of glass test chamber with accessories 91-467-0000

ERWEKA Suppository Disintegration Tester, Type ST 32

The ST 32 is a basic suppository disintegration tester and complies with the latest EP specifications. The unit comes with 3 test stations, either located inside a thermostatically heated 12 liter water bath.
The test stations are automatically turned 180° in adjustable intervals. ST 32 features an integrated "high-power" flow-through heating system (accuracy ± 0.2°C) and internal temperature sensor for temperature display. A USB printer interface for documentation purpose is included in the standard delivery range. Test time and nominal bath temperature is entered via the membrane keys. Current test time as well as actual water temperature are shown on clearly visible red LEDs.
On request, an alarm may be selected to sound upon completion of the preset test time.

230V/50Hz	10-469-0001
230V/60Hz	10-469-0002
115V/60Hz	10-469-0003
127V/60Hz	10-469-0004

Options for ST 32

- Water Stabiliser with colour indicator, 1 bottle for 2 fillings 80-080-0002
- Spare part kit for ST 32 comprising of sieves (2), belt (1) and fuses 90-469-0000

ERWEKA Suppository Disintegration Tester, Type ST 35

In contrast to the ST 32, the ST 35 comes with each test station located inside a 4 liter glass vessel (with optional magnetic stirrer) which are placed inside a thermostatically heated water bath (leak-free, double secured). The test stations are automatically turned 180° in adjustable intervals. ST 35 features an integrated "high-power" flow-through heating system (accuracy ± 0.2°C) and internal temperature sensor for temperature display. A USB printer interface for documentation purpose is included in the standard delivery range. Test time and nominal bath temperature is entered via the membrane keys. Current test time as well as actual water temperature are shown on clearly visible red LEDs.
On request, an alarm may be selected to sound upon completion of the preset test time.

Due to the width, at the ST 35 the test stations are separable to simplify the cleaning process.

Optional separately controllable magnetic stirrers can be placed in each test station (glass beaker) to get the required hydrodynamics.

230V/50Hz	10-470-0001
230V/60Hz	10-470-0002
115V/60Hz	10-470-0003
127V/60Hz	10-470-0004

Options for ST 35

- Set (3) of magnetic stirrers, controlled by the membrane keys of the unit
  10-470-500x
- Water Stabiliser with colour indicator, 1 bottle for 2 fillings 80-080-0002
- Spare part kit for ST 35 comprising of sieves (2), glass beaker (1), belt (1) and fuses
  90-470-0000

IQ/OQ/PQ documents

- IQ/OQ/PQ Document SBT 65-465-9999
- IQ/OQ/PQ Document SSP 65-466-9999
- IQ/OQ/PQ Document PM 30 65-467-9999
- IQ/OQ/PQ Document ST 32 65-469-9999
- IQ/OQ/PQ Document ST 35 65-470-9999

IQ/OQ/PQ tools

- Stop watch 90-240-0003
- Stop watch, certified 95-240-0003
- Immersion Thermometer cert. 75-001-0003

All-Purpose-Equipment

1. Motors

1.1. AR 403

The sturdy ball bearing worm gear drive is completely maintenance free and provides an output torque of max. 30 Nm. The unit features electronic speed control variable between 0 and 400 rpm.
The Speed is regulated by a digital dial. By a permanent nominal/actual adjustment the pre-selected speed is kept, even under varying load.
The AR 403-S is similar to the AR 403 but offers a different connection to the attachment. This connection is designed for better transfer of the torque. It can be used with some of the ERWEKA attachments.

Tolerance time: +/- 1 sec
Tolerance RPM: +/- 1 RPM

230V/50Hz	13-502-0001
230V/60Hz	13-502-0002
115V/60Hz	13-502-0003
127V/60Hz	13-502-0004

1.2. AR 403-S

The AR 403-S is similar to the AR 403 but offers a different connection to the attachment. This connection is designed for better transfer of the torque. It can be used with some of the ERWEKA attachments.

230V/50Hz	13-502-1001
230V/60Hz	13-502-1002
115V/60Hz	13-502-1003
127V/60Hz	13-502-1004

1.3. AMD

This Drive Unit features a 230V (single phase) or 400V (three phase) asynchronous motor. It is adjustable between 46 and 410 rpm by means of a lockable hand wheel.

AMD

230V/50Hz (single phase)	10-503-0001
400V/50Hz (three phase)	10-503-0031
230V/60Hz (single phase)	10-503-0002
400V/60Hz (three phase)	10-503-0032
115V/60Hz (single phase)	10-503-0003
200V/60Hz (three phase)	10-503-0033

Other voltage is available on request.

Options for AR 403/-S and AMD

- Foot Switch for ON/OFF of the above mentioned motor drives 11-507-0000
- AR 403 USB interface for print out 80-503-0000
- IQ/OQ/PV documents AR 403/-S 66-503-9999

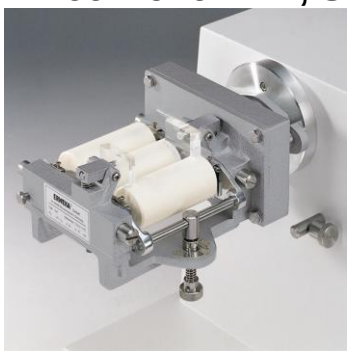
2. Attachments

Universal Gear, UG

The ERWEKA Universal Gear is required for adjustment of the operation angle and for speed reduction. It is needed to operate the following attachments: KB 15/20/S, PT, DKE/S and GTE.

UG	10-508-0000

Three-Roller-Mill, SM/SMS



This attachment is suitable for the production of ointments, pastes, crèmes and similar products. The space between the rollers is adjustable by one screw. According to customer's requirements, the rollers can be delivered made of porcelain or st.steel.

SM (rollers made of porcelain)	10-508-1000
SMS (rollers made of st.steel)	10-508-2000

Homogeniser, HO/HHO

For oil-in-water or water-in-oil emulsions. The mixing is done by compression by st.steel piston. The volume of the st.steel hopper is 1.5 litres. Max. output 30kg/h.

HO (standard version)	10-509-0000
HHO (with heated hopper)	10-509-1000
HO/UA	(circulation and filling unit) 80-509-0000

Planetary Stirrer, PRS

An ideal mixer for crèmes, ointments, pastes, liquids and moist powders. Different st.steel mixing and kneading tools come with the unit. The 5.0 litre hopper is made of st.steel and offers a maximum capacity of 60%.
Optionally an electric heated vessel or a double jacket vessel for heating and cooling by water is available.

PRS	10-512-0000
DER (vessel with heater)	80-512-0000
DW (vessel with double jacket)	80-512-5000

Laboratory Kneader, LK5

Two st.steel “Z” formed arms are rotating in different direction in different speed to offer best mixing results. The container has a capacity of 5.0 litres with a max. capacity of 65%.
Optional the container is available with an electric heating jacket.

LK 5	10-514-0000
LK 5/DER (heated container)	10-514-5000

Suppository and Lipstick Moulding Machine, SG 4/W

For the moulding of suppositories, lipsticks and similar products. The mixing vessel has a capacity of 5.0 litres with a max. capacity of 65% and can be electrically heated between 20°C and 100°C. Stirring, mixing and melting is achieved in a single operation and are not interrupted during the filling process.

SG 4/W	10-515-0000
Moulds on request	

Filling and Dosing Machine for Liquids, FDF

Two position filling and dosing machine. Precision dispensing, no-drip filling, easy adjustment of volume, quick removal of the dosing pumps and valves for cleaning, sterili-sation and space saving tabletop design.
Max. Output 2.000 fillings/h.
Dosing pumps for 5 - 30 ml (DP 30) and 20 - 150 ml (DP 150) and filling nozzles in different diameter are available.
The FDF is the basic unit without pumps.

FDF	10-516-0000
DP 30 (5-30 ml)	80-516-0010
DP 150 (20-150 ml)	80-516-0020
Filling Nozzles (2), 6 mm	80-516-0001
Filling Nozzles (2), 8 mm	80-516-0002

Filling and Dosing Machine for Ointments and Crèmes, FDS

For precision filling and dosing of ointments, crèmes, emulsions and similar products into tubes, cans, bottles etc. The st.steel hopper has a volume of 19.0 litres. Standard dosing ranges between 10 and 200 ml. Filling nozzles with 2, 4 and 8 mm i.d. are delivered with the unit. Max. capacity 1.200 fillings/h.
Optional dosing unit for filling and dosing of 0.5 to 25 ml and dispense heads with different apertures and special heads for filling tubes.

FDS	10-517-0000
Dosing 0.5 to 25 ml	80-517-1000
Dispense heads for tubes	80-517-2000

Ball Mills, KM

For grinding crystalline materials and for mixing dry, or - under certain circumstances - moist materials. The balls are made of porcelain having a diameter from 30 to 50 mm. The drum is sealed air-tight with a lid and is delivered incl. frame for drive unit. Drum and Balls can be sterilised in water.
For using the Ball Mill, a drive support is needed, which is optional available lengthened for the simultaneous use of two Mixers of the same size (KM 5 or KM 10). The Drum is available with either 5 or 10 litres volume.

KM 0 stainless steel for UG	10-518-0050
KM 5 (5.0 litres volume)	10-518-0000
KM 10 (10.0 litres volume)	10-518-1000
KMD 5 (2x 5.0 litres volume)	10-518-2000
KMD 10 (2x 10.0 litres volume)	10-518-3000
Spare drum, 5.0 l.	90-518-0500
Spare drum, 10.0 l.	90-518-1000
Spare set of balls	90-518-2000

Double Cone Mixer, DKM

For free flowing powders and granules. The arrangement of the mixer in combination with the angle adjustment of the Universal Gear allows a multi-dimensional mixing process. The 11.9 l st.steel container has a working capacity of approx. 50%.

DKM	10-520-0000

Drum Hoop Mixer, RM

Drum Hoop Mixer with diagonal placement of the drum within the hoop. The rotation of the hoop itself produces an uniform, three dimensional displacement of the material to be processed and hence a tumbling mixing action. The mixer comprises of two parts: drive support and drum hoop with acrylic mixing drum. Drum is delivered incl. frame for drive unit. For using the Drum Hoop Mixer a drive support is needed, which is optional available lengthened for the simultaneous use of two Mixers of the same size (RM 5 or RM 10). Mixing drums with 5 and 10 litres volume are available.

RM 5 (5.0 l volume)	10-519-0000
RM 10 (10.0 l volume)	10-519-1000
Spare vessel, 5.0 l	90-519-0000
Spare vessel, 10.0 l	90-519-1000

Y-Mixer, YB 5

ERWEKA mixer YB 5 with Y-shaped mixing vessel for the gentle mixture of solid well flowing materials (bulk materials). The rotary motion of the mixing vessel makes a particularly homogeneous mixture possible and is suitable for sensitive materials. For optimal filling, emptying and cleaning the mixing vessel is equipped with three capacious openings.
Volume of mixing container: 5 litres, recommended working conditions: max. 1.5 litres (30%) and 0 - 40 RPM.
All parts coming into contact with the material are made of stainless steel.

10-527-0050

Vibration Sieve Shaker, VT

Reciprocating cam system. The intensity of the shaking action can be adjusted by the speed of the motor drive.
Different sieve sets can be fitted to the sieve shaker. 10-521-0000

Sieve sets

Sieve set comprising of 9 sieves (Kresner) acc. to DAB 1998, ISO 9044 No. 0-8, 31 cm diameter, made of Phosphorbronce, **Type VS**
80-521-0000

Sieve Inlays, Mesh of Stainless Steel Mesh DIN 4189 fixed with wire ring.

Mesh 180 µm	80-521-0180
Mesh 250 µm	80-521-0250
Mesh 355 µm	80-521-0355
Mesh 500 µm	80-521-0500
Mesh 710 µm	80-521-0710
Mesh 1,40 mm	80-521-0140
Mesh 2,00 mm	80-521-0200
Mesh 2,80 mm	80-521-0280
Mesh 4,00 mm	80-521-0400

Equal to 80-521-0000 but made of st.steel, **Type VS/S** 80-521-0001

Sieve Inlays, Mesh of Stainless Steel Mesh DIN 4189 fixed with wire ring.

Mesh 180 µm	80-521-1180
Mesh 250 µm	80-521-1250
Mesh 355 µm	80-521-1355
Mesh 500 µm	80-521-1500
Mesh 710 µm	80-521-1710
Mesh 1,40 mm	80-521-1140
Mesh 2,00 mm	80-521-1200
Mesh 2,80 mm	80-521-1280
Mesh 4,00 mm	80-521-1400

Sieve set comprising of 4 sieves (315 µm; 71 µm; 1,25 mm; 2,0 mm MW) acc. to ISO 9044, 20 cm diameter, made of st.steel, Type **PS/S**
80-521-0002

Cover made of stainless steel with collection vessel (A+D), d=200 80-521-2310

Test Sieves made by stainless steel, version: Soft-PVC-Welding, contains Sieve Frame Rd 200x50, Sieve Mesh according to DIN4788, (Mesh 135 µm – 2,00 mm)

Mesh 315 µm	80-521-2315
Mesh 710 µm	80-521-2710
Mesh 1,25 mm	80-521-2125
Mesh 2,00 mm	80-521-2200

Coating Pan DKE/DKS

The Universal Gear attaches the Coating Pans to the motor drive. This allows adjusting the angle of the pan and getting an optimum result from the coating process. An infra red radiator with fixing rod can be mounted above the pan to accelerate drying if required.

DKE, st.steel pan, volume 9.5 l., max. capacity 30%, 275 mm outside diameter 10-522-0001

DKS, st.steel pan, volume 15.0 l., max. capacity 30%, 350 mm outside diameter 10-522-0002

Infra red drying attachment 80-522-0000

Spare bulb for above 90-522-0000

Polishing Drum

Designed for polishing of coated tablets. The interior of the drum is covered with interchangeable felt parts. The cover of the drum has a 120 mm diameter opening for control of the coating process as well as for adding polishing agent during the production process. To connect to an ERWEKA motor drive, a Universal Gear, Type UG is needed.

PT	10-523-0000
Spare set of felt parts	90-523-0000

Wet Granulator, FGS

The Wet Granulator operates on the oscillating rotor principle by compressing the granules through a sieve of a predetermined size. All parts coming into contact with the product are made of st.steel. The unit is supplied with sieves of 1.0 mm and 1.6 mm MW. Other sieves are available on request.
Max. capacity 30 kg/h.

FGS incl. standard sieves	10-525-0000
Spare sieve 1.0 mm MW	90-525-0010
Spare sieve 1.6 mm MW	90-525-0016
Sieve 300 µm MW	80-525-0315
Sieve 630 µm MW	80-525-0630
Sieve 800 µm MW	80-525-0800
Sieve 1.00 mm MW	80-525-1000
Sieve 1.25 mm MW	80-525-1250
Sieve 1.60 mm MW	80-525-1600
Sieve 2.00 mm MW	80-525-2000
Sieve 2.50 mm MW	80-525-2500
Sieve 3.15 mm MW	80-525-3150

Sieves with different MW can be supplied on request according to customer specifications.

Dry Granulator, St. Steel, TG 2000

Two st.steel rollers equipped with teeth produce a powerful grinding action by forcing the material against a series of breaking combs. Very low proportion of “fines” (max. 25%) which can even be reduced to about 15% by adjustment of the “slug” making process. Max. capacity 20 kg/h.

TG 2000	10-524-0000

Pelletiser, GTE

The Pelletiser is attached to the motor drive via the Universal Gear to be able to adjust the angle. The rotary movement of the pan carries the product to the top of the pan whereupon it then flows down in an even stream to the base whereupon the process is repeated. By the addition of the requisite amount of liquid, this process can be converted into the formation of pellets. The pellet size is chosen by the angle the pan is adjusted, the amount of liquid added and the type of feed. When the pan is full, the pellets will be continuously rolled over the edge of the pan into a container. All parts coming into contact with the material are made of st.steel.

GTE	10-528-0000

Cube Mixers, KB

Mixing by tumbling action to produce homogenous blend. Because of the gentle mixing action the mixer may be used sensitive products. The mixing action is assisted by three st.steel rods strategically positioned within the cube. The Cube Mixer is available in two sizes, made of acrylic glass or st.steel. Max. capacity is 40% of the total volume of the cube.
A Universal Gear is needed to attach the Cube Mixer to the motor drive in order to be able to change the angle.

KB 15, made of acrylic glass, 3.5 l volume
10-526-0015
KB 15 S, made of st.steel, 3.5 l volume
10-526-1015
KB 20, made of acrylic glass, 8.0 l volume
10-526-0020
KB 20 S, made of st.steel, 8.0 l volume
10-526-1020
KB 30 made of acrylic glass, 11 l volume
10-526-0030
KB 30 S made of st. steel, 11 l volume
10-526-1030

High Speed Mixer, SW 1/S

Drum mixer operating on the plough-share principle and designed to mix powders, granules and other products of a fibrous nature. Quantity ratios of 1:100.000 can be mixed homogenously in just a few minutes. The mixing drum has a removable cover and can rotate through 180 degrees for loading and emptying. All parts coming into contact with the material are made of st.steel.
The mixing drum has a volume of 5.0 l and a max. capacity of approx. 70%.
SW 1/S 10-530-0000

Conical Mill, CM 60/UD

Is a product in feed system for application for development in pharmaceutical and food industry which comminute powdery and free-flowing products by a sieve (adjustable 0.3 – 3.0 mm; perforated round holes, grater holes or square holes; see list) with fixed maximum sizes of impurity-free granule.
Rotation speed (continuous 60 – 1200 revs/min) and sieve crack (standard 1.5 mm, adjustable 0.5 – 3.0 mm in 0.25 mm steps) can be varied for detailed adjustment of process.
10-527-0000

Options

- Material certificate for all product contacting parts 85-527-9999
- Rotor type I (square shaped impeller bars) 80-527-0100
- Rotor type IV (round shaped impeller bars) 80-527-0200
- Rotor type V (slanted impeller bars) 80-527-0300
- Rotor type VI (small shovel type impeller bars) 80-527-0400
- Rotor type VII (quarter-circle shaped impeller bars) 80-527-0500
- Rotor type VIII (a large shovel type impeller bars) 80-527-0600

Sieve/screen inserts

- Round holes RL 0,5 mm 80-527-1000
- Round holes RL – 0,6 – 0,8 mm 80-527-2000
- Round holes RL – 1,0 – 1,4 mm 80-527-3000
- Round holes RL – 1,5 – 2,5 mm 80-527-4000
- Friction holes RR – 1.0 – 1,2 mm 80-527-5000
- Friction holes RL – 1,5 – 2,5 mm 80-527-6000
- Friction holes RR – 3.0 mm 80-527-7000
- Square holes QL– 1,5 – 2,5 mm 80-527-8000

Tablet Presses

Single Punch Tablet Press, EP-1

The single punch eccentric Tablet Press EP-1 can manufacture tablets and odd shaped products with a diameter of up to 20mm. It operates automatically i.e. the die is filled, the material compressed and the tablet ejected continuously. The compression force of up to 3 tons and the filling depth of up to 15mm are easy to adjust. All components are either covered with hard chrome, or made of stainless steel AISI 316 or acrylic glass for the front door. The throughput is max. 4.000 strokes per hour.

EP-1 72-531-0000

Technical Data EP-1:

- ✓ Press speed is infinitely variable
- ✓ Max tablet diameter 20mm
- ✓ Max filling depth 17mm
- ✓ Max compression force 3t
- ✓ Max tablet output 4000 tablets/hour
- ✓ Net weight 135kg
- ✓ Dimensions Press L/W/H (mm) 425/385/640
- ✓ Dimensions with attachment parts L/W/H (mm) 550/400/800
- ✓ Power supply 230V/50-60Hz
- ✓ Electrical load 2,2 kVA

Options for Tablet Press, Type EP-1

- Measurement and display of compression force 72-xxx-1xxx
- Data transfer option RS 232 interface 72-531-0006
- Data logging Software 72-531-0005
- Standard data export via RS232 interface 82-531-0001
- Support table in stainless steel; H/D/W (mm): 750/600/800 82-531-0004
- Single punch and die set, 4.0 mm to 20.0 mm diameter, Type STR 1, for round tablets 72-531-0001
- Single punch and die set, 4.0 mm to 20.0 mm diameter, Type STS 1, for shaped tablets 72-531-0002
- Development of STR 1 or STS 1 72-531-0003
- IQ/OQ documents 65-531-9999
- Transformer for EP-1 (from 110V to 230V) 72-531-2007

16-Station Rotary Tablet Press ERWEKA TR-B 16

Table top GMP tablet press with 16 stations for production of up to 38.400 tablets/hr (effective production = 70 % max. production), Tooling type EU “B” (IPT).
All machine settings set by hand-wheels with position indicator at the front of the unit.
Three-phase motor with variable speed (Inverter). Main gear box in oil-bath.
The unit comes with Rotary Force Feeder (variable speed) and Pre-Compression station with Rollers as standard.

- ✓ 16 stations
- ✓ Tooling EU (IPT) “B”
- ✓ For round and shaped tablets
- ✓ Max. Diameter 18 mm,
  18 mm x 9 mm for shaped tablets
- ✓ Max. Filling Depth 17 mm
- ✓ Die Table 10 - 40 min^{-1}
- ✓ Die Table Stainless steel (1.2530)
- ✓ O-ring punch seals for upper sleeves
- ✓ Turret with keyways in upper guides
- ✓ Output up to 38.400 samples/hr.
- ✓ Max. Compression force 40 kN
- ✓ Max. Pre-Compression force 6 kN
- ✓ Upper punch penetration 3 mm
- ✓ Voltage 380 – 3 Ph – 50 Hz
- ✓ H/D/W (mm): 1200/460/670
- ✓ Net weight: 380 kg

380V/3-phase 50Hz	70-532-0001
230V/2-phase 50Hz	70-532-0002

Options for TR-B 16

- Set (18) of round tooling, diameter to be agreed 80-532-0001
- Set (18) of shaped tooling (oblong, oval), length/diameter to be agreed 80-532-0002
- Set (18) blind Dies 80-532-0003
- Open Die Feeder 70-532-xx1x
- Level Control Sensor in Hopper 80-532-0005
- Support Table in stainless steel 80-532-0004

8-Station Rotary Tablet Press ERWEKA TR-D 8

Table top GMP tablet press with 8 stations for production of up to 19.200 tablets/hr (effective production = 70 % max. production), Tooling type EU “D” (IPT).
All machine settings set by hand-wheels with position indicator at the front of the unit.
Three-phase motor with variable speed (Inverter). Main gear box in oil-bath.
The unit comes with Rotary Force Feeder (variable speed) and Pre-Compression station with Rollers as standard.

- ✓ 8 stations
- ✓ Tooling EU (IPT) “D”
- ✓ For round and shaped tablets
- ✓ Max. Diameter 25 mm,
  22 mm x 10 mm for shaped tablets
- ✓ Max. Filling Depth 17 mm
- ✓ Die Table 10 - 40 min^{-1}
- ✓ Die Table stainless steel (1.2530)
- ✓ O-ring punch seals for upper sleeves
- ✓ Turret with keyways in upper guides
- ✓ Output up to 19.200 samples/hr.
- ✓ Max. Compression force 40 kN
- ✓ Max. Pre-Compression force 6 kN
- ✓ Upper punch penetration 3 mm
- ✓ Voltage 380 – 3 Ph – 50 Hz
- ✓ H/D/W (mm): 1200/460/670
- ✓ Net weight: 380 kg

380V/3-phase 50Hz	70-533-0001
230V/2-phase 50Hz	70-533-0002

Options for TR-D 8

- Set (8+2) of round tooling, diameter to be agreed 80-533-0001
- Set (8+2) of shaped tooling (oblong, oval), length/diameter to be agreed 80-533-0002
- Set (10) Blind Dies 80-533-0003
- Open Die Feeder 70-533-xx1x
- Level Control Sensor in Hopper 80-532-0005

Accessories and Instrumentation of TR-B 16/TR-D 8

- Device for upper compression force meter and recorder (upper roller). Strain-gauge load cell fitted in the shaft, which supports the upper compression roller (complete with single amplifier) to be connected to computer with software 75-532-0001

- Device for lower compression force meter and recorder. A strain-gauge load cell fitted under the ejection cam (complete with single amplifier) to be connected to computer and software 75-532-0003

- Device for upper pre-compression force meter and recorder (upper roller). Strain-gauge load cell fitted in the shaft, which supports the upper compression roller (complete with single amplifier) to be connected to computer with software 75-532-0004

- Device for upper and lower punch position and displacement and recorder (upper roller).Strain-gauge load cell fitted in the shaft, which supports the upper compression roller (complete with single amplifier) to be connected to computer with software 75-532-0005

- Device for ejection force meter and recorder. A strain-gauge load cell fitted under the ejection cam (complete with single amplifier) to be connected to computer and software 75-532-0002

- Windows based software to analyse the above mentioned forces. Complete with interface board, cables and triggering device (for IBM compatible computers, from Pentium 233) 51-532-0000

- Electric Switchboard (st.steel) including computer and printer for positioning of amplifier boxes, computer and printer (please note that the parts can also be placed on a table) 76-532-0004

- Calib. Kit to calibrate press strain gauge 85-532-0001

- Documents for Tablet Press Qualification; IQ/OQ/PQ documents, IQ documents are filled 65-532-5999

ERWEKA Roller Compactor

RCC 100x20 Pharma

Roller Compactor for dry granulation which turn powder into granules within seconds. This machine is especially designed to cater for frequent product changes and to work with small quantities of product, like 10 - 20 g batches. With a maximum throughput capacity of up to 10 kg/h this machine can also used for small scale production.
This Roller Compactor features a new component exchange system for easy cleaning and maximum flexibility is mobile and has an integrated control system. It is operated by a user friendly touch panel.
Results observed could be scaled up to production machines.

230V/50Hz	13-456-0001
230V/60Hz	13-456-0002
115V/60Hz	13-456-0003
127V/60Hz	13-456-0004

Options

- IQ/OQ/PQ document for Roller Compactor 66-456-9999
- Band screw stirrer for processing light bulk density material 80-456-0100
- Spare compactors rolls compactor surface smooth 80-456-0101
- Spare compactors rolls compactor surface grooved 80-456-0102
- Spare compactors rolls compactor surface knurled 80-456-0103
- Spare screen insert for rotor sieving mill 80-456-0200
- Start up Assistance, commissioning and service 80-456-0000

ERWEKA Fluid Bed System FB-05

The very compact „FB-05“ has been designed for drying, granulating and coating of quantities from 50 to 750 ml (optional from 5 to 100 ml, see also Micro-Kit).
Special care has been taken to offer easy handling and fast cleaning to make this unit the ideal partner for use in research and development departments.
This advanced fluid bed offers perfect flow properties to be able to work even with difficult products in very small batch sizes. The unique spay nozzle has been developed to work with very small quantity of product. Outlet air is filtered by metal filter cartridges. All parts which come in contact with the product are made of high-grade steel (AISI-316L).

230V/50Hz 71-602-0001

Technical data contained herein (including, without limitation, weight and measurement indications) are issued for the sole purpose of giving an approximate value, unless they are expressly referred to as binding in the order confirmation.

- ✓ Container volume: 750ml
- ✓ Power consumption: 3000 W
- ✓ Working pressure: 4-6 bar flow pressure
- ✓ Required quality: oil, water and particle free remaining humidity < 5.5 g/m³ filtered: 0,1 µm Remaining oil content < 1 mg/m³
- ✓ Air power volume flow range: 30 -60 Nm³/h, max. 100Nm³/h (depending on product/process insert)
- ✓ Exhaust air filter: cartridge filter with a theoretical mesh size of 10 µm
- ✓ Net Weight of unit: 90 kg
- ✓ Dimensions: width/ depth/ height: 600 mm/ 700mm/ 860 mm

Options

- Mobile undercarriage to place the FB-05. Table approximate dimensions: width/ depth/height: 1000mm/800mm/900mm 80-602-0005
- Micro-Kit. Micro-Kit can be used for granulating and coating. Minimum batch sizes of 2,5 – 50 g can be processed. It consists of expansion chamber with gravity feed charge portand pneumatically actuated vibrator, control unit for vibrator, filter plate with filters, product container with one gauge connection for optional temperature probe, bottom plate with vertically adjustable spray nozzle, spray nozzle 0,3mm, hose system including small hose nozzle for minimal spray rates. 80-602-0006
- Peristaltic pump to transport the spray liquid from a spray medium tank to the spray nozzle. Used by granulating and coating. 80-602-0007
- Temperature measurement instrument with digital display. It can be used alternatively for one of both gauge connections. 80-602-0008
- Expansion chamber made of borosilicate glass instead of Plexiglas (solvent resistant) 80-602-0009
- Spray nozzle insert, 0,3mm 80-602-0010
- Spray nozzle insert, 0,8mm 80-602-0011

Recommended spare parts

- Basic package, including O-rings and sealings 94-602-0000
- Package for Micro-Kit, including O-rings 94-602-0001

Universal Automated Documentation for all kind of Rotary Tablet Presses

Automated Quality Control

For automated Quality Control the TRB 16/TRD 8 as well as any other tablet press wit single- or double outlet can be connected to the ERWEKA MultiCheck by an automatic Switch and a Vacuum Transport System.
At the Windows based AutoDoc software the interval for withdraw of the tablets from the tablet press, transport to the MultiCheck and the number of samples to test is entered.The tablets are separated (by TabSelect), transported (by a Venturi Transport System), inserted into the MultiCheck and than automatically tested for weight, thickness, diameter and hardness.
The results are stored at the PC. Results, statistics and trend analysis can be displayed or hard-copied by a connected printer.

Dedusters

Different Dedusters are available for TRB 16 and TRD 8. Please contact our Sales Department for information.

Please contact us with your specifications.

230V/50Hz	10-600-0001
230V/60Hz	10-600-0002
115V/60Hz	10-600-0003
127V/60Hz	10-600-0004

Blister Density Checker

ERWEKA Vacuum Density Tester, Type VDT/S

To verify the function of blister packaging machines ERWEKA offers the Vacuum Blister Density Tester, Type VDT/S.
The unit is equipped with an integrated vacuum pump.
Pressure (-200 mbar and -850 mbar, dependant on weather condition and size of container) and time (up to 99 min., 59 sec.) are adjustable by the membrane function keys. The two bright LE displays show remaining test run-time and actual pressure.
The blister is placed in the external pressure container, which is filled with liquid. Different sizes of containers are available.

- ERWEKA VDT/S Blister Density Tester, 100V – 240V, 50 and 60Hz with Pressure Container ∅ 150 mm, including porcelain insert for holding the blister 11-630-0000

- ERWEKA VDT/S Blister Density Tester, 100V – 240V, 50 and 60Hz with Pressure Container ∅ 200 mm, including porcelain insert for holding the blister 11-63x-1xxx

- ERWEKA VDT Blister Density Tester, 100V – 240V, 50 and 60Hz with Pressure Container ∅ 250 mm, including porcelain insert for holding the blister 11-63x-2xxx

- ERWEKA VDT Blister Density Tester, 100V – 240V, 50 and 60Hz with Pressure Container ∅ 300 mm (glass), including porcelain insert for holding the blister 11-63x-3xxx

Options for VDT/S

- Upgraded electronic with USB printer interface for documentation of the test procedure 11-630-1xxx

- Qualification Tool Kit for VDT/S comprising of:
  - Vacuummeter Type DVR
  - Stop Watch 90-630-0000

- Qualification Tool Kit, certified, for VDT/S comprising of:
  - Vacuummeter Type DVR
  - Stop Watch 95-630-0000

- IQ/OQ/PQ Documents 66-630-9999

- Spare Part Kit 92-630-0000

Metered Dose Inhalers (MDI's)

ERWEKA Type Dosage Unit Sampling App. DUSA-MDI

The ERWEKA Type Dosage Unit Sampling App. DUSA-MDI has been designed for the sampling and testing of pressurised Metered Dose Inhalers (MDI's). It is used to perform those tests specified by the relevant compendial standards, namely, "Total Number of Discharges per Container or Inhaler", "Dose Uniformity" and "Dose Uniformity Over the Entire Contents" as well as those tests designed to simulate the performance of the inhaler during actual use. 70-901-0001

- Base Plate including Clamps 80-901-0001
- Pack (100) Filters, 1 micron, 47 mm diam. 80-906-0000

Unit is delivered excl. filters!

Andersen Type Cascade Impactor, App. 1

The "Andersen" Type Multi-Stage Cascade Impactor Type ACI-MDI 1000 has been designed for determining the particle size (aerodynamic size distribution) of Metered Dose Inhalers (MDI's) in accordance with the specifications as laid down in USP and EP.
The unit is available in two versions for operation at **28,3 litres per minute** or **60 litres per minute**.

- Andersen Type Cascade Impactor, 23,8 litres made of Aluminium 70-902-0001
- Andersen Cascade Impactor, 23,8 litres made of stainless steel 70-902-0002
- Andersen Type Cascade Impactor, 60 litres made of Aluminium 70-902-0011
- Andersen Cascade Impactor, 60 litres made of stainless steel 70-902-0012

Unit is delivered excl. filters!

Options

- Universal Induction Port, Aluminium 80-902-2001
- Universal Induction Port, stainless steel 80-902-2002
- 60 litres conversion kit, Aluminium 80-902-6001
- 60 litres conversion kit, stainless steel 80-902-6002
- 90 litres conversion kit, Aluminium 80-902-9001
- 90 litres conversion kit, stainless steel 80-902-9002
- Certificate of compliance 85-905-9999
- Pack (100) Filters, 81 mm, 0,7 micron 80-902-0000
- Pack (100) Filters, 81 mm, 1,4 micron 80-902-0001

Dry Powder Inhalers (DPI's)

ERWEKA Type Dosage Unit Sampling App., Type DUSA-DPI

The ERWEKA Type Dosage Unit Sampling App. for DPI's has been designed for the sampling and testing of Dry Powder Inhalers. It is used to perform those tests specified by the relevant compendial standards, namely, "Total Number of Discharges per Container or Inhaler", "Dose Uniformity" and "Dose Uniformity Over the Entire Contents" as well as those tests designed to simulate the performance of the inhaler during actual use. 70-906-0001

- Base Plate including Clamps 80-901-0001
- Pack Filters (100) for Type DUSA-DPI, 1 micron, 47 diameter 80-907-0000

Unit is delivered excl. filters!

Andersen Type Cascade Impactor, App. 3

The "Andersen" Type Multi-Stage Cascade Impactor has been designed for determining the particle size (aerodynamic size distribution) in accordance with the specifications as laid down in USP and EP. The unit is available in two versions for operation at **28,3 litres per minute** or **60 litres per minute**. A **Preseparator** is interposed between the Induction Port and Stage 0 of the apparatus in order to collect large masses of non-inhalable powder prior to their entry into the impactor.

- Andersen Cascade Impactor and Preseperator, 28,3 litres, made of aluminium 70-909-0001
- Andersen Cascade Impactor and Preseperator, 28,3 litres made of stainless steel 70-909-0002
- Andersen Cascade Impactor and Preseperator, 60 litres, made of aluminium 70-909-0011
- Andersen Cascade Impactor and Preseperator, 60 litres made of stainless steel 70-909-0012

Unit is delivered excl. filters!

Options for Type ACI-DPI 1000

- Universal Induction Port, aluminium 80-902-2001
- Universal Induction Port, stainless steel 80-902-2002
- 60 litres conversion kit, Aluminium 80-902-6001
- 60 litres conversion kit, stainless steel 80-902-6002
- 90 litres conversion kit, Aluminium 80-902-9001
- 90 litres conversion kit, stainless steel 80-902-9002
- Certificate of compliance 85-905-9999
- Pack (100) Filters, 81 mm, with open centres 0,7 micron 80-909-0000
- Pack (100) Filters, 81 mm, with open centres 1,4 micron 80-909-0001

ASTRA Draco Multi-Stage Liquid Impinger (MSLI), Type ALI 1000

The Astra Draco Type Multi-Stage Liquid Impinger (MSLI) is a versatile **five stage** cascade impactor, which can be used for determining the **particle size** (aerodynamic size distribution) of inhalers.

- Multi-Stage Liquid Impinger made of Aluminium 70-905-0001
- Multi-Stage Liquid Impinger made of stainless steel 70-905-0002
- Universal Induction Port, Aluminium 80-902-2001
- Universal Induction Port, stainless steel 80-902-2002
- Certificate of compliance 85-905-9999

Unit is delivered excl. filters!

Options

- Filter for Type Astra (MSLI)

Single Stage Glass Impactor Glaxo (EP App. A)

The unit operates on the principle of liquid impingement to divide the dose emitted from the inhaler into the non-respirable dose impacting on the mouth and oropharynx wich is swallowed and the remaining respirable dose.
The apparatus is relatively simple, easy to use and rugged in construction and is ideal for routine Quality Control applications. The Glass Single Stage Impactor comes complete with base plate and appropriate clamps, bossheads and fittings as standard. 70-907-0001

Options

- Special Modification for nasal sprays 80-907-0001

Single Stage Metal Impinger Fisons (EP App. B)

The principle of operation is similar to that of the glass impinger in that the unit splits the aerosol cloud into the respirable fraction that effectively passes through to the final filter stage and the non-respirable fraction that is trapped in either the throat or on the sintered glass disc of the stage plate. The Metal Single Stage Impinger comes complete with base plate and appropriate clamps, boss heads and fittings as standard. 70-908-0001

Inhaler Accessories

Testing Unit for Dry Powder Inhalations, Type TP-DG-DPI 1000

In case of Dry Powder Inhalers (DPI's), both the emitted and fine particle dose are affected by the **strength** and **duration** of the patient's inspiration. Furthermore, different inhalers provide varying degrees of resistance to inhalation. It has been established that the standardised testing of Dry Powder Inhalers is dependent on a number of factors:

1. The pressure drops of the air drawn over the inhaler during inspiration
2. The appropriate flow rate (Q) to give a pressure drop of 4kPa.
3. The duration of in-vivo inspiration to give a volume of 4 litres
4. Flow rate stability in terms of critical (sonic) flow

The "General Control Equipment" for DPI's specified in USP and "Experimental Set Up" for testing specified in EP take all of these theoretical factors into account.
The **main features** of the Critical Flow Controller are as follows:

- ✓ Built in Differential Pressure Meter for measuring pressure drop (P1)
- ✓ Flow Adjustment valve to adjust flow rate
- ✓ Timer controlled two-way solenoid valve to adjust flow duration
- ✓ Absolute Pressure Meters for measuring sonic flow (P2 and P3)
- ✓ Membrane keypad control
- ✓ LED display of differential and absolute pressure valves
- ✓ Illuminated LC display of Set and Elapsed Times
- ✓ Printer port

Critical Flow Controller, TP DG- DPI1000
70-913-0001

ERWEKA Vacuum Pump Type VP 1000

The ERWEKA Vacuum Pump VP 1000 used for testing MDI's and DPI's employs a Rotary Vane Vacuum Pump rated at 250 litres/min. free air (210 Litres/min. when used with the control valve). The unit is supplied complete with an Electronic Digital Flow Meter as standard.
The air-flow is adjusted by means of the screw valve on the front of the pump. The screw valve itself creates a restriction to the air flow such that the maximum flow rated achievable is approximately 210 litres/min.

ERWEKA Vacuum Pump, Type VP 1000, incl. Flow Meter
70-910-0001

ERWEKA High Power Vacuum Pump, HVP

The standard pump VP 1000 rated at 250 litres/min free air (i.e., with nothing attached to it). However, this flow rate can fall dramatically when the resistance of both test device and inhaler are taken into account.
For tests where the flow-rate of the standard pump is not enough to create a Sonic-Flow a second “High-Power” version of the ERWEKA Vacuum Pump, Type HPV, is available. This Rotary Vane Vacuum Pump rated at 460 litres/min free air.

Basically, there are two factors that govern the ability of a particular pump to achieve sonic flow

1. The maximum capacity (air-flow) of the vacuum pump
2. The resistance to that air flow provided by the test device (Andersen, MSLI etc.) and the inhaler itself

ERWEKA “High-Power” Vacuum Pump, Type HPV, incl. Flow Meter 70-910-0002

Digital Flow Meter Type DFM Stand Alone Unit

The Digital Flow Meter has been especially designed for use with the instrumentation employed in testing pharmaceutical inhalers. Main features of the DFM are: highly visible digital LED readout direct in litres/minute, printer port and range 20-120 litres/minute. Full calibration certificate supplied with each unit.

Digital Flow Meter - Stand Alone 70-912-0001

Leak Test Kit

All impactors should be periodically tested to check that there is no external leakage. Excessive leakage of air from an impactor can result in the incorrect flow rate being achieved, poor aerodynamic performance and possible loss of drug.
Leak testing is a simple and effective means of checking that all the impactor components are assembled correctly and that there is no critical wear associated with the inter-stage seals.

The Leak Test Kit provides a fast and effective means of running a health check on the impactor. Simply connect the leak check system between a suitable vacuum pump and the impactor - the leak test takes approx. 60 seconds.
70-915-0001

- Leak Test Kit with all tools in certified version 70-920-0001

Mouth Piece Adaptors

- Standard Mouthpiece Adaptor, Type A
  80-910-0001
- Standard Mouthpiece Adaptor, Type B
  80-910-0002

Special Mouthpiece Adaptors customised to particular Inhalers are available on request. Their purpose is to provide an airtight seal between the mouth of the test apparatus and the inhaler being tested.

- Special Mouthpiece Adaptor, Type A
  80-916-0001
- Special Mouthpiece Adaptor, Type B
  80-916-0002
- Spare canister 80-917-0001

IVIS Stage Mensuration

- Stage Mensuration to check the jets on Andersen or Andersen Type Cascade Impactor stages from 5.5 down to 0.2 mm in diameter (Hole Diameter Inspection with Report)

  220-240V/50Hz 70-918-0001
- Stage Mensuration (Hole Diameter Inspection with Report) including 1 Set of new O-Rings 70-918-0002
- Manual cleaning and rodding of the Impactor 70-018-0003
- Inhaler Software Programme
  50-900-0000
- IQ/OQ/PQ handbook 66-9xx-9999

Carrying Cases

- Carrying Case for Andersen Type
  80-902-0002
- Carrying Case for ASTRA MSLI
  80-905-0002

Services

Installation

Installation of most ERWEKA units (TA/R, TDR, SVM, ZT, TBH or DT) is easy and can be achieved by the user himself or an engineer of the company.

For more sophisticated products such as Dissolution Systems ERWEKA offers complete tubing kits and even pre-configuration. The user or the engineer has to connect the tubing and plug the numbered interface cable in the equivalent numbered sockets only.

For a perfect installation and training of the user/s, ERWEKA offers a complete installation service by an ERWEKA engineer. This means the unit or system will be installed at your site, the operation will be checked and the user/s receive a training in the operation of the unit and (when needed) software.

Qualification/Qualification

ERWEKA offers Installation Qualification (IQ), Operation Qualification (OQ) and Performance Verification (PV) documents for all its testing units.
These documents allow the user to validate/ qualify the equipment independently by following the instructions and filling in the attached forms.
To outsource the Qualification/Qualification procedure, ERWEKA offers installation as well as Operation Qualification and Performance Verification (IQ/OQ/PV) services on site. Our trained Service performs the complete IQ/OQ/PV for you as well as training the users to operate the equipment. This service ensures perfect installation and worry free operation.

ERWEKA also offers Performance Qualification (PQ). Our trained engineers will carry out the PQ test according to your requirements. This action can even take place on the weekend not to interrupt your normal laboratory work!

For Qualification Qualification Tool kits (non-certified or certified) are available from ERWEKA specially designed for each unit. These Qualification Tool Kits comprise all necessary tools for re-qualification of the unit. When purchasing a calibrated tool kit most of the tools have to be recalibrated each year. This procedure can be done by the purchaser or by ERWEKA (Calibration Tool Service).

With the new generation of Dissolution Tester, ERWEKA offers the next step. The units are equipped with Qualification-/calibration- and service interval displays. The user is reminded to re-qualify the unit after the USP/EP and FDA proposed interval (6 months). As an option, the units check the OQ automatically during the test run and monitors mistakes on the standard “OQ traffic light”. For Operation Qualification (OQ) no papers have to be filled in! The results of the System Suitability Test are entered by the keypad of the unit, a System Suitability Test printout is created by the unit.

Calibration

Before shipping all ERWEKA Hardness- and Combination Testers as well as all electronic temperature sensors are calibrated. The calibration documentation comes with the unit.

For re-calibration ERWEKA units come with a calibration menu in the standard firm-ware. On some of the equipment the calibration menu is password protected to assure that only qualified staff can re-calibrate the unit.

For perfect operation and assurance of accurate results, ERWEKA offers Calibration Services on site by trained ERWEKA Service Management staff. All calibration tools used by ERWEKA are constantly checked. Certificates can be shown before the calibration procedure takes place.

For Tablet-Hardness Testers ERWEKA now offers a dynamic Calibration Tool which allows calibration of the electronic load cell without weights! The so-called AutoCal System uses a certified external load cell and (optionally) calibration software for easy and more accurate calibration within max. 5 minutes. In addition the unit will be calibrated at up to 50 points within the measuring range for assurance of results throughout the testing range. Results of calibration can be printed out and/or stored by the computer.
The system can be bought for self-calibration or be used when having a calibration con-tract.

Re-calibration contracts are available either monthly, every 3 months, every 6 months or once a year.

Maintenance

To ensure a long lifetime for your units ERWEKA recommends regular maintenance.

Dissolution Testers of the new generation are equipped with a Service Interval Display, which reminds the user every 3.000 hours of operation (stirring action), that maintenance is recommended.

Maintenance contracts are available. Our well-trained service engineers perform the maintenance.

Leasing

Not to invest capital ERWEKA offers leasing of its equipment in co-operation with well-known international banks.

Leasing is normally possible from a purchasing amount of approx. € 10.000,00.

Used Equipment

ERWEKA also buys and sells used equipment. When purchasing new ERWEKA equipment ask, maybe we are interested to take back your previous unit.

These units will be completely refurbished, not just painted!

So when you need good equipment but your budget is limited, ask for used equipment.

Dissolution Testing – General Information

Major organizations and groups that influence dissolution testing standards in the US:

In the United States, Dissolution testing for pharmaceutical products in tablet and capsule form is required by the US Food and Drug Administration (FDA). The standards for testing are put by the US Pharmacopoeia (USP). Testing procedures are described in USP general chapters under Dissolution <711> and Drug Release <724>. These standards offer different test apparatuses to use according to the nature of the dosage form.

U.S. Pharmacopeia (USP)
The United States Pharmacopeia (USP) is a nongovernmental, standards-setting organization that advances public health by ensuring the quality and consistency of medicines, promoting the safe and proper use of medications, and verifying ingredients in dietary supplements. USP provides standards for more than 4,000 prescription and non-prescription drugs, dietary supplements, veterinary drugs and health care products. These standards are published in the United States Pharmacopeia and National Formulary (USP–NF). www.usp.org.

US Food and Drug Administration (FDA)
The FDA's major contribution to dissolution testing is its issuance of numerous documents titled "Guidance for Industry" that describe how to apply the similarity factor. The similarity factor is used to compare the dissolution profiles of different batches to assess or establish bioequivalence.
The FDA co-sponsors many workshops (e.g. from AAPS) and conferences on current regulatory issues. www.fda.gov.

Fédération Internationale Pharmaceutique (FIP)
FIP is a world-wide federation of national pharmaceutical (professional and scientific) associations, which has a mission to represent and serve pharmacy and pharmaceutical sciences around the globe. FIP spearheaded the writing of the Guidelines for Dissolution Testing of Solid Oral Products. The guidelines were published as a joint report with Canada's Official Laboratories and Medicines Control Services and FIP's Section of Industrial Pharmacist. The main focus of the FIP Dissolution Working Group is to provide a forum for discussion of dissolution issues and to train dissolution analysts. The working group has sponsored and held many training workshops on dissolution testing. Workshops were held in Vietnam and in Thailand.The equipment was made available by ERWEKA on both workshops.
Homepage: www.fip.org.

American Association of Pharmaceutical Scientists (AAPS)
AAPS is a professional, scientific society of more than 10,000 members employed in academia, industry, government and other research institutes worldwide. The AAPS sponsors many short courses, workshops, and conferences dedicated fully or in part to dissolution testing.

Official Methods of Dissolution Testing and the corresponding ERWEKA equipment:

United States Pharmacopoeia: USP XXVI (26)
European Pharmacopoeia: Ph.Eur 7 th Edition
British Pharmacopoeia: BP
Japanese Pharmacopoeia

USP Apparatuses:

USP Apparatus 1: Rotating Basket
USP Apparatus 2: Paddle
USP Apparatus 3: Reciprocating Cylinder
USP Apparatus 4: Flow-Through Cell
USP Apparatus 5: Paddle over Disc
USP Apparatus 6: Rotating Cylinder
USP Apparatus 7: Reciprocating Holder

ERWEKA Dissolution Testers for USP apparatus 1 (Basket), 2 (Paddle), 5 (Paddle over Disc) and 6 (Rotating Cylinder) are available in 2 standard versions, namely DT DT 720 and DT 820 series with 8 USP/Pharm.Eur. vessels (1.000 ml or 2.000 ml volume) and 6, 7 or 8 test stations (stirrers).
Most ERWEKA Dissolution Testers are available in 2 versions, "Low-Head" for easy manual sampling as well as automated sampling and low evaporation (max. 0.3% within 24 h at 37.0°C) and "High-Head" for maximum access to the vessels during the complete test run.
Special versions with 3 test stations of 4.000 ml and 1 test station of 1.000 ml (reference) as well as Dual Dissolution Testers with 16 USP/Pharm.Eur. vessels and 12 or 14 test stations (stirrers) can be supplied.

ERWEKA Flow-Through-Cell Dissolution Testers for USP apparatus 4 are specifically made for those products which require long term tests (i.e implants) and products which need a high amount of media volume to dissolve (see page 72).

The perfect unit for multiple media change is the **CALEVA BIO-DIS which complies with USP apparatus 3 and optional apparatus 7**.
It is the perfect equipment for multiple pH change due to the 6 rows of vessels, 6 test stations and 2 Reference Positions each, located in a thermostatically heated water bath.